

andria razmaZis  
maTematikis institutis

2010 wl is

samecni ero angari Si

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andria razmaZis maTematikis institutSi amJamad aris cxra samecniero ganyofil eba: al gebris, maTematikuri l ogikis, geometria-topol ogiis, maTematikuri anal izis, diferencial uri gantol ebebis, maTematikuri fizikis, drekadobis maTematikuri Teoriis, Teoriul i fizikis, al baTobis Teoriisa da maTematikuri statistikis.

2010 wl is 31 dekembris monacemebiT institutSi iricxeba 68 mecnier-TanamSromel i, maT Soris 36 fizika-maTematikis mecnierebaTa doqtori (3 saqarTvel os mecnierebaTa akademiis akademikosi da 4 wevr-korespondenti) da 29 fizika-maTematikis mecnierebaTa kandidatia.

## Tavi 1. 2010 wl is sabiuj eto samuSao programebi

2010 wels institutSi muSavdeboda 9 sabiuj eto programa:

**programa # 1:** wrfivi da arawrfivi harmoniul i anal izis, zomis Teoriis probl emebis gamokvl eva arakl asikuri dasmebiT; gamoyenebebi funqciaTa Teoriisa da maTematikuri fizikis sasazRvro amocanebSi

(maTematikuri anl izis ganyofil eba)

programis koordinatori - v. kokil aSvil i

programis Semsrul ebl ebi - a. xaraziSvil i, v. paataSvil i, g. xuskivaZe, o. ZagniZe, S. tetunaSvil i, l . efremiZe, a. mesxi, e. gordaZe, a. kirTaZe.

**programa # 2:** sawyis-sasazRvro da sasazRvro amocanebi evol uciuri diferencial uri gantol ebebisatvis- (01.01.2010w.\_20.12.2013w.)

(diferencial uri gantol ebebis ganyofil eba)

programis koordinatori \_ i. kiRuraZe

Semsrul ebl ebi \_ m. aSordia, g. berikel aSvil i, j. gvazava, s. muxigul aSvil i, n. farcvania, s. xaribegaSvil i, o. j oxaZe.

**programa # 3:** Termomeqanikuri da el eqtromagnituri vel ebis urTierTqmedebis arakl asikuri amocanebi- (01.01.2008w.\_20.12.2012w.)

(maTematikuri fizikis ganyofil eba)

programis koordinatori \_ rol and duduCava

programis Semsrul ebl ebi \_ ufrosi mecnier-TanamSromel i Tengiz buCukuri, ufrosi mecnier-TanamSromel i rol and gaCeCil aZe, ufrosi mecnier-TanamSromel i oTar Wkadua, mecnier-TanamSromel i avTandil gaCeCil aZe, mecnier-TanamSromel i daviT kapanaZe.

**programa # 4:** uwyvet tanTa meqanikis sasazRvro-sakontaqto da Sereul i sasazRvro amocanebi-

(drekadobis maTematikuri Teoriis ganyofil eba)

programis koordinatori - r. bancuri;  
Semsrul ebl ebi - a. cicqiSvil i, r. Savl ayaZe, s. kukuj anovi, I .  
SafaqiZe, I . gogol auri.

**programa # 5:** al gebrul i K-Teoria da bivariantul i K-Teoria,  
homol ogiuri da homotopiuri al gebra, arakomutaciuri geometria,  
kategoriaTa Teoria  
(al gebris ganyofil eba)  
programis koordinatori \_ xvedri inasariZe  
programis Semsrul ebl ebi \_ Tamar daTuaSvil i, nikol oz inasariZe,  
Tamaz kandel aki, baCuki mesabl iSvil i, al eqsi paWkoria, dal i  
zanguraSvil i, emzar xmal aZe, guram donaZe.

**programa # 6:** topol ogiur da al gebrul obieqtTa model ebi da  
maTi gamoyenebani  
(geometria-topol ogiis ganyofil eba)  
programis koordinatori \_ Tornike qadeiSvil i  
programis Semsrul ebl ebi \_ nodar berikaSvil i, giorgi ximSiaSvil i,  
mal xaz bakuraZe, al eqsandre el aSvil i, vaxtang I omaZe, samson  
sanebl iZe, zurab Todua, manana miqi aSvil i.

**programa # 7:** oradobis Teoria da misi gamoyenebebi naxevarmesrebi,  
gasrul ebebis, kompaqtifikaciebis, funai amas Teoremi sa da  
dendroidul i al gebrebi Seswavl aSi  
(maTematikuri I ogikis ganyofil eba)  
programis koordinatori \_ I eo esakia  
programis Semsrul ebl ebi \_ mamuka jibl aZe, nikol oz beJaniSvil i,  
daviT gabel aia, dimi tri pataraia.

**programa # 8:** optimal uri investirebisa da hej irebis amocanebi  
SezRudul i informaciisa da model is ganuzRvrel obis pirobebSi.  
(al baTobis Teoriisa da maTematikuri statistikis ganyofil eba)  
programis koordinatori \_ mixeil mania  
programis Semsrul ebl ebi \_ nanul i I azrieva, Teimuraz totonj aZe,  
Tengiz ServaSiZe, omar furTuxia, zurab cigroSvil i.

**programa # 9:** kvanturi vel ebi Teoriasa da mis gamoyenebebtan  
dakavSirebul i maTematikuri amocanebis kvl eva el ementarul i  
nawil akebisa da kondensirebul i garemos fizikaSi"  
(Teoriul i fizikis ganyofil eba)  
programis koordinatori \_ merab el iaSvil i  
programis Semsrul ebl ebi \_ vaxtang garsevaniSvil i, al eqsandre  
kviniXiZe, giorgi I avrel aSvil i, giorgi ciciSvil i, giorgi  
j orj aZe, badri maRraZe, avTandil SurRaia, arsen xvedel iZe, zaqro  
giunaSvil i.

## Tavi 2. samecniero grantebi

(a) 2010 wels institutSi muSavdeboda SoTa rusTavel is erovnul i samecniero fondis grantebiT dafinansebul i 12 proeqti

1. proeqti # GNSF/ST07/3-169: "harmoniul i da arawrfivi analizis zogierTi sakiTxi arakl asikuri dasmit da maTi gamoyenebebi diferencial ur gantol ebebSi" \_ vaxtang kokil aSvil i (proeqtis samecniero xel mZRvanel i), vaxtang paataSvil i (proeqtis menej eri), ZiriTadi personal i: I aSa efremiZe, al eqsandre mesxi, Saqro tetunaSvil i, al eqsandre xaraziSvil i, al eqsi kirTaZe;

2. proeqti # GNSF/ST07/3-175: "kerZowarmoebul ebiani diferencial uri gantol ebebi hiperzedapirebze: garsTa Teoriis gantol ebebi da maqsvel is sistema" \_ rol and duduCava (proeqtis samecniero xel mZRvanel i da proeqtis menej eri), ZiriTadi personal i: daviT natroSvil i, daviT kapanaZe, Tengiz buCukuri, oTar Wkadua, I evan siga.

3. proeqti # GNSF/ST08/3-386: "drekadobis Teoriis Sereul i da sakontaqto amocanebi, drekad sxedul Si Zabvebis optimal urad ganawil ebis amocanebi" \_ ZiriTadi personal i: revaz bancuri (proeqtis samecniero xel mZRvanel i), nugzar Savl ayaZe (proeqtis menej eri), giorgi kapanaZe, nana odiSel iZe;

4. proeqti # GNSF/ST08/3-387: "rgol ur speqtrTa cal keul i Tvisebebis mamodel irebel i al gebrul i struqturabis gamokvl eva" \_ ZiriTadi personal i: mamuka jibl aZe (proeqtis samecniero xel mZRvanel i), mal xaz bakuraZe (proeqtis menej eri), al eqsandre el aSvil i, Teimuraz firaSvil i, dimitri pataraia, revaz qurdiani;

5. proeqti # GNSF/ST08/3-397: "oradobis Teoria da misi gamoyenebebi arakl asikuri I ogikis semantikaSi" \_ ZiriTadi personal i: I eo esakia (proeqtis samecniero xel mZRvanel i), daviT gabel aia (proeqtis menej eri), guram beJaniSvil i, nikol oz beJaniSvil i, dimitri pataraia, mamuka jibl aZe;

6. proeqti # GNSF/ST08/3-398: "topol ogiur sivrceta al gebrul i model ebi gansazRvrul i axal i koj aWvuri operaciebiT da maTi gamoyenebani homol ogiisa da homotopiis TeoriebSi" \_ ZiriTadi personal i: nodar berikaSvil i (proeqtis samecniero xel mZRvanel i), Tornike qadeiSvil i (proeqtis menej eri), samson sanebl iZe;

7. proeqti # GNSF/ST08/4-400: "vel is efeqturi Teoriis axal i ganvitareba barionebisTvis" \_ ZiriTadi personal i: al eqsandre kvinixiZe (proeqtis samecniero xel mZRvanel i), badri maRraZe (proeqtis menej eri), j ambul gegel ia;

8. proeqti # GNSF/ST08/4-405: "ZiriTadi mdgomareobis amocanebi kvanturi vel ebis TeoriaSi" \_ ZiriTadi personal i: merab el iaSvil i (proeqtis samecniero xel mZRvanel i), avTandil SurRaia (proeqtis menej eri), giorgi j orj aZe, al eqsandre kvinixiZe, giorgi I avrel aSvil i, giorgi ciciSvil i, arsen xvedel iZe, badri maRraZe.

9. proeqti # GNSF/ST09\_471\_3-104: "optimal uri investireba da hej ireba SezRudul i informaciisa da model is ganuzRvrel obis pirobebSi" \_ ZiriTadi personal i: mixeil mania (proeqtis samecniero xel mZRvanel i da menej eri), revaz TevzaZe, omar furTuxia, besik CiqviniZe, zurab cigroSvil i, nanul i I azrieva, Tengiz ServaSize, Teimuraz toronj aZe.

10. proeqti # GNSF/ST09\_175\_3-101: "sasazRvro amocanebi singul arobebiani Cveul ebrivi diferencial uri gantol ebebisaTvis" \_ ZiriTadi personal i: ivane kiRuraZe (proeqtis samecniero xel mZRvanel i), nino farcvania (proeqtis menej eri), mal xaz aSordia, sul xan muxigul aSvil i, zaza soxaZe.

11. proeqti # GNSF/ST09\_23\_3-100: "funqciuri sivrceebis, diferencial uri da integral uri operatorebisa da arawrfivi anal izis axal i aspeqtebi da gamoyenebebi kerZowarmoebul ian diferencial ur gantol ebebSi" \_ ZiriTadi personal i: vaxtang kokil aSvil i (proeqtis samecniero xel mZRvanel i), vaxtang paataSvil i (proeqtis menej eri), I aSa efremiZe, al eqsandre mesxi, Saqro tetunaSvil i, cira canava.

12. proeqti # GNSF/ST09\_730\_3-105: "al gebrebisa da maTi mraval nairobemis homol ogiuri, homotopiuri da kategoriul i Tvissebebi" \_ ZiriTadi personal i: Tamar daTuaSvil i (proeqtis samecniero xel mZRvanel i), al eqsi paWkoria (proeqtis menej eri), dal i zanguraSvil i, Teimuraz firaSvil i, zurab j anel iZe.

(b) SoTa rusTavel is erovnul i samecniero fondis grantebi T dafinansebul i sxva proeqtebi, roml ebSic monawil eoben institutis TanamSroml ebi

proeqti # **GNSF/ST07/3-170 (2008-2010):** ZiriTadi personal i maTematikis institutidan: T. buCukuri, a. gaCeCil aZe, r. gaCeCil aZe, r. duduCava, d. kapanaZe, o. Wkadua.

proeqti # **GNSF/ST08/4-422 (2008-2010):** I uwobis darRvevis kosmol ogiuri niSnebi adreul samyarosi, ZiriTadi personal i maTematikis institutidan g. I avrel aSvil i.

(g) 2010 wels institutis TanamSromel Tamier muSavdeboda agreTve ucxouri grantebiT dafinansebuli 9 samecniero Tema:

EPSRC—Engineering and Physical Sciences Research Council grant EP/H020497/1 “Mathematical Analysis of Localised Boundary- Domain Integral Equations for Variable Coefficient Boundary Value Problems” (2009-2012). ZiriTadi Semsrul ebeli o. Wkadua.

Volkswagen Foundation grant I/84 328 “arakomutaciuri al gebra-geometria-topologia”, 2009-2011, xel mZRvaneli x. inasarize.

SCOPES Grant, Testing fundamental physics with cosmology, December 1, 2009- November 30, 2012; Project Swiss co-ordinator M.Shaposhnikov (EPFL, Lausanne), Georgian Team Leader T.Kahniashvili (Ilia State University), Semsrul ebeli g. Lavrel aSvili

The Russian Foundation for Basic Research, grant No. 10-01-00200.

### Tavi 3. ZiriTadi samecniero Sedegebis mokle daxasiaTeba

#### maTematikuri anl izis ganyofil eba

programa # 1: wrfivi da arawrfivi harmoniuli analizis, zomis Teoriis probl emebis gamokvl eva arakl asikuri dasmebiT; gamoyenebebi funqciaTa Teoriisa da maTematikuri fizikis sasazRvro amocanebSi

programis koordinatori - v. kokil aSvili

2010 wels damTavrebuli Temebis ZiriTadi Sedegebi

a) institutis 2010 wl is samuSao programiT gaTval iswinebuli samuSaoebis ZiriTadi mecnieruli Sedegebi

1. damtkicebulia hilibertis gardaqmnisa da SeuRlebuli funqciebis wonian grand lebegis sivrceSi SemosazRvrul obis kriteriუმები. dadgenilia, rom singul aruli integral ebis SemosazRvrul obisatvis wonian grand lebegis sivrceebSi aucilebelia da sakmarisia, rom wona ekuTvnodes makenhauptis kl ass (kokil aSvili).
2. dadgenilia, rom gawrfevad wirze gansazRvruli kosis singul aruli integraluri operatorisa da maqsimaluri

- funqciis SemosazRvrul obisaTvis wonian l ebegis sivrceSi aucil ebel i da sakmarisia, rom erTdroul ad wiri iyos karl esonis da wona ekuTvnodes am wirebisaTvis morgedul ma-  
 kenhauptis tipis kl ass (kokil aSvil i).
3. SemoRebul ia da gamokvl eul ia mwkrivTa Sej amebadobis axal i meTodi. am meTodiT Sej amebadobis kerZo SemTxvevas warmoadgens, magal iTad, cvl adi rigebiT Cezarosa da risis meTodebiT Sej amebadoba. SemoRebul i meTodi gamoyenebul ia furies mwkrivTa ganSl adobis probl emebis Sesaswavl ad. saxel dobr, ganzogadebul ia kol mogorovis cnobil i Teorema iseTi j amebadi funqciis arsebobis Sesaxeb, roml is furies trigonometriul i mwkrivi yvel gan ganSl adia. damtkicebul ia, rom Tu Sej amebadobis maCvenebl i  $\alpha_n$  nul isken krebada da  $\alpha_n = O\left(\frac{1}{\ln n}\right)$ , maSin arsebobs iseTi j amebadi funqcia, roml is Sesabamisi cvl adi rigis Cezaros da risis saSual oebi ganSl adia (tetunaSvil i).
  4. dadgenil ia erTi da orwoniani Sefasebebi cal mxrivi maqsimal uri funqciebis, singul arul i integral ebisa da potencial ebisTvis. ganzogadebul ia, cvl adi rigis riman-  
 l iuvil is operatorisaTvis dadgenil ia kval is utol obebis marTebul obis kriteriumebi. zomian metrikul sivrceze gansa-  
 zRvrul i singul arul i integral ebisa da potencial ebisTvis damtkicebul ia orwoniani utol oebi (kokil aSvil i, mesxi).
  5. periodul funqciaTa aproqsimaciis amocanebi gamokvl eul ia l ebegis wonian sivrceebSi. saxel dobr, am sivrceebisaTvis damtkicebul ia funqciaTa konstruqciul i Teoriis pirdapir da Sebrunebul i Teoremebi; dadgenil ia ganzogadebul i sigl uvis modul is ormxrivi Sefasebebi trigonometriul i pol inomebiT saukeTeso miaxl oebebis terminebSi; aRmoCenil ia sivrcis gavlenasTanado Sefasebebeze (kokil aSvil i, canava).
  6. furies trigonometriul i mwkrivis wrfivi meTodebiT Sej amebadobis saSual oebisaTvis damtkicebul ia normiT gadaxris Sefasebebi rogorc ganzogadebul i sigl uvis modul is, aseve saukeTeso miaxl oebebis mniSvnel obiT. yvel a miRebul i Sefaseba sivrcis mudmivi maCvenebl is SemTxvevaSi ar eqvemdebareba gaumj obesebas.  
 cvl admaCvenebl ian l ebegis wonian sivrceebSi ganzogadebul ia bernSteinis cnobil i utol oba trigonometriul pol inomTa warmoebul ebis Sesaxeb (kokil aSvil i).
  7. SemoRebul ia cvl admaCvenebl iani hardisa da smirnovis kl asebi, dadgenil ia maTi Tvisebebi; rgol Si cvl admaCvenebl iani hardis kl asis harmoniul i funqciebisaTvis amoxsnil ia dirixl es amocana; amonaxsnebi agebul ia efeqturad (kokil aSvil i, paataSvil i).
  8. cvl admaCvenebl iani l ebegis sivrceebis CarCoebSi gamokvl eul ia anal izur funqciaTa gadaadgil ebiani sasazRvro



- amocana im SemTxvevaSi, roca SeuRI ebis koeficienti wyvetilia. amocana amoxsnilia im koSis tipis integral Ta kl asSi, romel Ta simkvriveebi miekuTvnebian cvl admaCvenebl ian l ebegis sivrceebis (paataSvil i).
9. uban-uban gl uvsazRvrian areebSi cvl admaCvenebl iani smirnovis kl asis harmoniul i funqciebisaTvis amoxsnilia dirixles amocana; aRmoCenilia amoxsnadobis pirobebze sivrcis maCvenebl isa da sazRvris kuTxian wertil ebSi kuTxeebis sidideebis gavlena. amoxsnadobis yvel a SemTxvevaSi amonaxsnebi agebul ia cxadad (kokil aSvil i, paataSvil i).
  10. damtkicebul ia, rom TiToeul i cvl adis mimarT periodul i, ori cvl adis j amebadi funqciis furies mwkrivis raime organzomil ebian segmentze wevrobrivi integrebiT miRebul i mwkrivi krebadia am funqciidan integral isaken aRniSnul segmentze. dadgenil ia absol uturad uwyveti funqciis furies koeficientebis nul isaken krebadohis xasiaTi (ZagniZe).
  11. Seswavl il ia arsad monotonuri, arsad uwyveti da arazomadi funqciebis Tvisebebi. es Tvisebebi gamoyenebul ia zomis gagrZel ebis amocanis amoxsnaSi (xaraziSvil i).
  12. Seswavl il ia nebismier araTvl ad sigma-kompaqtur l okal urad kompaqtur j gufSi masiuri qvej gufis arsebobis sakiTxi. aseTi qvej gufebi gamoyenebul ia haaris zomis invariantul i gagrZel ebis amocanebSi (xaraziSvil i).
  13. dazustebul ia gare matric-funqciebis roli speqtral uri faqtorizaciis TeoremaSi. kerZod martivad naCvenebl ia, rom anal izuri matric-funqcia aris gare Tu-ki misi determinanti aris gare. manamde es Teorema damtkicebul i iyo sxva avtorebis mier Zvris mimarT invariantul i operatorebis SedarebiT rTul i Teoriis gamoyenebiT (efremiZe).
  14. matric-funqciebis speqtral uri faqtorizaciis miRebul i al goritmis mixedvit daiwera Sesabamisi kompiuterul i programa MatLab-Si da es programa Sedarda am enaSi arsebul speqtral uri faqtorizaciis gamzadebul programebs spf(.)-s da spf(.,syl)-s. Cvens mier Sedgenil i programis Tval saCino upiratesoba sizustisa da siswrafis parametrebiT demonstrirebul ia magal iTebze (efremiZe).

### **diferencial uri gantol ebebis ganyofil eba**

programa # 2: sawyis-sasazRvro da sasazRvro amocanebi evol uciuri diferencial uri gantol ebebisatvis- (01.01.2010w.\_20.12.2013w.)

programis koordinatori \_ i. kiRuraZe

#### **(a) sabiuj eto TemiT gaTval iswinebul i samuSaoebi.**

optimal uradaa aRweril i klasi meore rigis arawrfivi diferencial uri gantol ebebis, romel TaTvis aral okal ur amocanebs gaaCniaT ori mainc amonaxsni (kiRuraZe).

dadgenil ia garkveul i azriT aragaumj obesebadi sakmarisi pirobebi, roml ebic saTanadod uzrunvel yofen:

- mraVal wertil ovani rezonansul i amocanebis amoxsnadobasa da cal saxad amoxsnadobas arawrfivi diferencial uri sistemebisaTvis (ki RuraZe);
- periodul i amocanis cal saxad amoxsnadobas maRal i rigis wrfiv funkcional ur-diferencial ur gantol ebaTa sistemebisaTvis (muxigl aSvil i);
- arawrfiv pirobebiani sasazRvro amocanebis amoxsnadobas organzomil ebiani diferencial uri sistemebisaTvis (farcvania);
- dirixl es rezonansul i amocanis amoxsnadobas meore rigis arawrfivi diferencial uri gantol ebebisaTvis (muxigl aSvil i).

meore rigis arawrfiv mraVal ganzomil ebian hiperbol ur sistemaTa erTi kl asisaTvis Seswavl il ia koSis maxasiaTebel i amocana momavl is konusSi. dadgenil ia pirobebi sistemis arawrfivobis maxasiaTebel ebze da sivrciT ganzomil ebaze, roml ebic uzrunvel yofen aRniSnul i amocanis gl obal uri amonaxsnis arsebobas da erTaderTobas (xaribegaSvil i).

tal Ris erTganzomil ebiani wyarosa da disipatiuri arawrfivi wevrebis Semcvel i gantol ebebisaTvis dadgenil ia sasazRvro amocanaTa l okal uri da gl obal uri amoxsnadobisa da cal saxad amoxsnadobis sakmarisi pirobebi (j oxaZe, xaribegaSvil i).

agebul ia maRal i sizustis kompaqturi sxvaobiani sqema hel mhol cis gantol ebisaTvis Sereul i sasazRvro amocanis amosaxsnel ad. miRebul ia cdomil ebis SefasebaTa skal a, romel ic SeTanxmebul ia zusti amonaxsnis sigl uvesTan (berikel aSvil i).

regul arizebul i grZel i tal Ris gantol ebisaTvis dasmul i sawyis-sasazRvro amocanisatvis agebul ia erT parametrze damokidebul sxvaobian sqemaTa oj axi. dadgenil ia cal saxad amoxsnadoba da kreadoba.Uusasrul o areze dasmul i sawyisi amocanis SemTxvevisaTvis SemoTavazebul ia xel ovnuri sasazRvro pirobebis SerCevis ricxviTi meTodi. Catarebul ia ricxviTi eqsperimentebi, rac adasturebs miaxl oebiTi amonaxsnis karg sizustes (berikel aSvil i).

## **(b) sagranto proeqtebiT gaTval iswinebul i samuSaoebi.**

arawrfivi diferencial uri sistemebisaTvis fazuri cvl adebis mimarT swrafad zrdadi marj vena mxareebiT dadgenil ia aral okal uri amocanebis amoxsnadobisa da araamoxsnadobis optima- l uri pirobebi (ki RuraZe).

dadgenil ia orwertil ovan da aral okal ur amocanaTa fredhol murobisa da koreqtul obis aragaumj obesebadi pirobebi:

- მაჩალი რიგის რეფერენციალური და ფუნქციონალური-დiferენციალური განტოლებების ზღვრული სინგულარობები (კირაზი, მუხილიანი, ფრანკია);
- ორგანიზაციული რეფერენციალური სისტემების ზღვრული სინგულარობები (ფრანკია);
- რეფერენციალური განტოლებათა სინგულარული სისტემების (ასობია).

არარეფერენციალური განტოლებების, რომელთაც გააჩნიათ სინგულარობები ფაქტორული ადების მიმართ, ნაპოვია არალაკური ამოცანების დადებითი ამოხსნების არსებობის პირობები (კირაზი).

დამტკიცებულია ზოგადი თეორემა (აპრიორული შემოწმების პრინციპი) განტოლებული წევრული რეფერენციალური განტოლებათა არარეფერენციალური სისტემების (ასობია).

### მათემატიკური ფიზიკის განყოფილება

პროგრამა # 3: თერმოდინამიკური და ელექტრომაგნიტური ელემენტების ურთიერთკავშირის არაკური ამოცანები - (01.01.2008წ.\_20.12.2012წ.)

პროგრამის კოორდინატორი \_ როლიან დუცავა

A. პირველი მიმართულებები:

- გარდა ორგანიზაციული თეორიის რეფერენციალური მოდელების **მათემატიკური დაფუძნება და გამოკვლევა:**

გადახედულია გარდის ასიმპტოტური მოდელი, რომელიც შემოსაზრებით იყო კოიტერის, სანტეს-პალენსიას, სიარლეს და სხვათა ნაშრომები. მიჩნეულია სედეგების ეყრდნობა გუნთერის თერმოდინამიკის, რომელიც შემოსაზრებით იყო რ. დუცავას ნაშრომები, ნაწილობრივ დ. მიტრეასთან და მ. მიტრეასთან ერთად. ამის სედეგად მიჩნეულია გარდის ორგანიზაციული უნივერსალი განტოლება რომელიც სამართლიანია ორივე შემთხვევაში, როგორც "მემბრანის" ტიპის ასევე "მოკნილი" გარდის განტოლება ცავერლია ტელის გარდის სასაუბროდო ზედპირზე გუნთერის თერმოდინამიკის, ნორმალური ვექტორული ველის და ლამის კონსტანტების მქონეობით (სედეგებისათვის: ასიმპტოტური მეთოდით ადრე მიჩნეული განტოლებები იწვევდა სასაუბროდო ზედპირის სიმრუდის ტენზორის სასაუბროდობას). დამტკიცებულია კონის აქსიალური თეორემა, რომელიც იქცევა სასაუბროდო დამტკიცდეს გარდის 2-განიზაციული განტოლებების ამოხსნადობა და ამოხსნის ერთადერთობა. ამოხსნადობა დამტკიცებულია როგორც ლაგრანჟის მიმართ ასევე პოტენციალთა მეთოდის გამოყენებით.

SemuSavebul ia sasrul i el ementebiT garsis organzomil ebiani gantol ebis amoxsnis ori al ternatiul i meTodi. damtkicebul ia am meTodebis kreadoba

**maqsvel is sistemis gamokvl eva bianizotropul , kerZod qiral ur garemoSi:**

Seswavl il ia maqsvel is anizotropul i sistemisTvis, rodesac el eqtrul i  $\varepsilon$  da magnituri  $\mu$  SeRwevadobebi warmoadgenen  $3 \times 3$ matricebs, Seswavl il ia fizikurad rel evanturi magnituri da el eqtrul i sasazRvro amocanebi. fsevdorxevis SemTxvevaSi (roca rxevis sixSiris parametri aris kompl eqsuri sidide), dadgenil ia sasrul da usasrul o areebSi gliuvi sazRvriT maqsvel is sistemisaTvis magnituri da el eqtrul i sasazRvro amocanebis srul i eqvalentoba or el ifsur sazRvro amocanasTan. amoxsna warmodgenil ia rogorc am ori sasazRvro amocanis amoxsnaTajami, rac izl eva saSual ebas dadgindes amoxsnis zusti struqtura.

SemuSavebul ia sasrul el ementTa meTodi variaciul i formul irebiT Caweril i sasazRvro amocanebisatvis maqsvel is gantol ebisatvis. SemuSavebul ia amoxsnis ori al ternatiul i meTodi. damtkicebul ia am meTodebis kreadoba

miRebul i Teoriul i da ricxviti Sedegebi testirebul ia model uri sivrcisaTvis, kerZod mraval Sriani garemosTvis.

- **hel mhol cis gantol ebis Seswavl a 2-ganzomil ebiani kuTxovani da ukuqcevis wertil ebis Semcvel i areebisaTvis:**

damtkicebul ia grinis formula ukuqcevis wertil ebian areebSi. miRebul i for-

mul is saSual ebit damtkicebul ia sasazRvro amocanebis amonaxsnaTaderToba hel m-

hol cis gantol ebisatvis Sida da gare ukuqcevis wertil ebis mqone areSi.

damtkicebul ia sasazRvro amocanebis fredhol muroba hel mhol cis gantol ebisatvis

sobol evis sivrceebSi woniT gare da Sida ukuqcevis wertil ebis mqone areSi.

**AB. meore mimarTul ebit:**

- **Termo-el eqtro-magneto-drekadobis Teoriis sasazRvro-sakontaqto amocanebis gamokvl eva kompozituri Sedgenil i sxel ebisatvis:**

gamokvl eul ia el eqtro-drekadobis Teoriis Sereul i da bzaris tipis amocanebi. aseve Seswavl il ia metal isa da el eqtro-drekadi sxel is urTierTqmedebis amocanebi bzariT sakontaqto

zedapirze. potencial Ta da fsevdodiferencial ur gantol ebaTa meTodis saSual ebiT damtkicebul ia am amocanebis amonaxsnebis arsebobisa da erTaderTobis Teoremebi. Seswavi il ia amonaxsnebis asimptoturi Tvissebebi. kerZod, mniSvnel ovani transversal urad izotropul i kl asis SemTxvevaSi miRebul ia amonaxsnis singul arobis gamosaTvl el i efeqturi formul ebi. Bzaris wibos maxl obl obaSi, im wiris maxl obl obaSi sadac icvl eba sasazRvro pirobebi da sakontaqto Dzedapiris sazRvris maxl obl obaSi. Amonaxsnis singul aroba damokidebul ia rogorc drekad mudmivebze aseve piezo da diel eqtrikul mudmivebze. Aamave dros amonaxsens oscil acia ar gaaCnia. Ees aris is efeqtebi romel ic ar gaaCnia amonaxsnebs kl asikuri drekadobis Teoriis SemTxvevaSi.

- **mikrostrukturis mqone drekadi sxel ebis maTematikuri probl emebis gamokvl eva:**

Seswavi il iqna drekadobis Teoriis statikis da dinamikis amocanebi xaxunis gaTval iswinebiT erTgvarovani hemitropul i sxel ebisaTvis. kerZod, ganxil ul ia statikuri amocana, rodesac drekadi sxel is sazRvris dadebiTi zomis nawil ze an mTl ianad mTel sazRvarze gaTval iswinebul ia xaxunis efeqti. pirvel SemTxvevaSi iwereba amonaxsnis arsebobis aucil ebel i piroba, romel ic garkveul SezRudvebSi warmoadgens sakmaris pirobasac. Ddinamikis amocanis gamokvl evisas orive SemTxvevaSi amocana upirobod amoxsnadia. am amocanebSi Seswavi il ia susti amonaxsnebis arsebobisa da erTaderTobis sakiTxebi. garda amisa ganxil eba ori drekadi hemitropul i sxel is cal mxrivi kontaqtis amocanac, egreTwodebul i bunebrivi SeuRwevadobis pirobis gaTval iswinebiT, anu rodesac deformaciis Sedegad erTi sxel i ar SeaRwevs meoreSi. am amocanaSi Seswavi il ia susti amonaxsnis arsebobisa da erTaderTobis sakiTxi.

- **I lokal izebul integral ur gantol ebaTa sistemebis Seswavi a:**

I lokal izebul i parametriqsis gamoyenebiT Seswavi il i iqna cvl adkoeficientebiani skal arul i diferencial uri gantol ebisaTvis dasmul i dirixl es, neimanisa da Sereul i amocanebis Sesabamisi I lokal izebul i integral ur gantol ebaTa sistemebi (Localized Boundary-Domain Integral Equations Systems). kerZod, Ddamtkicebul ia sasazRvro amocanebisa Dda Sesabamisi integral uri gantol ebaTa sistemis eqivalentoba. naCvenebia I lokal izebul i integral uri gantol ebaTa sistemis Sesabamisi operatoris Sebrunebadoba sobol evis tipis sivrceeSi.

## drekadobis maTematikuri Teoriis ganyofil eba

programa # 4: uwyvet tanTa meqanikis sasazRvro-sakontaqto da Sereul i sasazRvro amocanebi-

programis koordinatori - r. bancuri;

institutis programiT gaTval iswinebul i samuSaoebi. Pprograma moicavs 2006-2010 wl ebs. 2010 wel s:

Seswavi il ia drekadobis Teoriis Sereul i amocana ubnobriv-erTgvarovani sibrtiyisaTvis, romelic Sedgeba ori sxvadasxva drekadi mudmivebis mqone orTotropuli kuTxis formis sxel isagan, biseqtrisis gaswvriw aqvs kuTxis wveros gadamkveTi sasrul i sigrZis bzari. daSvebul ia, rom orive sxel is drekadi simetriis RerZebi emTxveva bzaris mimarTul ebas. Mmarjvena naxevarsibrtyeSi moTavsebul i bzaris napirebze moqmedebs simetriul i normal uri Zabvebi, xolo marcxena naxevarsibrtyeSi moTavsebul i bzaris napirebze mocemul ia simetriul i normal uri gadaadgil eba. Bbzaris napirebze mxebi Zabva nul is tolia. integral uri gardaqmnebis gamoyenebiT amocana miyvanil ia anal izuri funqciaTa Teoriis wrfivi SeuRl ebis sasazRvro amocanaze. miRebul ia amocanis amonaxsnebi efeqturi saxiT. Seswavi il ia Zabvis asimptotika kuTxis wveros midamoSi (bancuri, Savl ayaZe).

saangariSo periodSi kvl eva mimdinareobda Semdegi mimarTul ebiT:

1. drekadobis Teoriis sakontaqto amocanebi uban-uban erTgvarovani orTotropuli firfitisa da gamyof sazRvarze mis marTobul ad gamavali sasrul i an naxevradiusasrul o drekadi CarTvis urTierTqmedebis Sesaxeb. Amocanebi miyvaneba meore gvaris singul arul integro-diferencial ur gantol ebaze uZravi singul arobiT. integral uri gardaqmnebiT es ukanasknel i daiyvaneba rimanis amocanaze, romlis amonaxsni warmoidgineba kvadraturebSi. Ddgindeba sakontaqto Zabvebis asimptotika drekadi CarTvis bol oebis maxl obl obaSi. 2. drekadobis Teoriis sakontaqto amocanebi Sedgenili an orTotropuli firfitisaTvis sasrul i an naxevradiusasrul o CarTviT. miRebul i integro-diferencial ur gantol ebaTa sistemisaTvis zog SemTxvevaSi agebul ia zusti amonaxsnebi anal izur funqciaTa Teoriis meTodebiT, zog SemTxvevaSi miavl oebiTi amonaxsnebi orTogonal ur polinomTa meTodiis gamoyenebi. 3. dinamikuri sakontaqto amocanebi usasrul o drakadi dakvris mqone naxevarsibrtyisaTvis, romel zedac moqmedebs horizontal uri da vertikal uri harmoniul i datvirTvebi. amocanebi daiyvaneba integro-diferencial ur gantol ebaTa sistemaze ucnobi tangencial uri da normal uri sakontaqto Zabvebis mimarT. furies integral uri gardaqmnebis gamoyenebiT amocanebi amonaxsneba cxadi saxiT. Zabvis gamosaxul ebidan xdeba zedapiruli, gafarToebis da arekvl is tal Rebis Sesabamisi wevrebis gamoyofa da maTi gamokvl eva (Savl ayaZe).

Ggamokvl eul ia fil traciis Teoriis sivrcul i RerZsimetriul i nawil obriv ucnobsazRvriani stacionarul i Sereul i amocanebis amonaxsnebis moZebnis efeqturi meTodebi. siTxis moZraoba forovan areSi emociil eba darsis kanons (cicqiSvil i).

Ggamokvl eul ia cil indrul Tan maxl obel i drekad Semavsebl iani brunvis garsebis mdgradoba, roml ebic imyofebian temperaturisa da wnevis moqmedebis qveS. Gganixil eba saSual o sigrZis garsebi, romel Ta Sua zedapiris msaxvel is forma aRiwereba parabol uri funqciiT. ganixil eba rogorc dadebiTi ise uaryofiTi gausis simrudis mqone garsebi. gansazRvrul ia formul ebi Sesabamisi garsebis kritikul i datvirTvebisatvis (kukuj anovi).

Seswavl il ia or mbrunav forovan cil indrs Soris moTavsebul i siTbogamtari siTxis mdgradobis dakargvis Semdeg warmoqmnil i periodul i, kvaziperiodul i da qaosuri rejimebis bifurkaciebi, rodesac dinebaze moqmedebs radianul i temperaturul i gradienti da radianul i siTxis nakadi (SafaqiZe).

### al gebris ganyofil eba

programa # 5: al gebrul i K-Teoria da bivariantul i K-Teoria, homol ogiuri da homotopiuri al gebra, arakomutaciuri geometria, kategoriaTa Teoria

programis koordinatori \_ xvedri inasariZe

a) institutis 2010 wl is samuSao programiT gaTval isiwnebul i samuSaoebi

ganmartebul ia triangul irebadi kategoriis l okal izacia da kol okal izacia msuqani qvekategoriis mimarT. Aagebul ia bunebrivi grZel i zusti mimdevroba, romel ic akavSirebs homol ogiis funqtors misi l okal ozaciisa da kol okal izaciis funqtorebTan msuqani qvekategoriis mimarT. martiv ricxvTa mocemul i S simravl is mimarT l okal izebul ia kasparovis equivariantul i bivariantul i K-Teoria S - is mimarT, romel ic iZl eva kasparovis S-racional ur da S-grexvis bivariantul K - Teoriebs. Seswavl il ia am bivariantul i K - Teoriebis Tvisebebi da damyarebul ia maTi kavSiri kasparovis bivariantul K-TeoriasTan zusti mimdevrobis saxiT. Ddadgenil ia baum-konis hipotezis equival enturi formul irabani. Seswavl il ia kavSiri kompl eqsur da namdvil K K - Teoriebs Soris koeficientebis garkveul i oj axisTvis. Sefasebul ia sasrul koeficientebiani equivariantul bivariantul K - Teoriis el ementebis rigi. (x.inasariZe da T.kandel aki).

damtkicebul ia, rom wina\_hopfis monadebi Bruguieres, A., Lack, S., and Virelizier, A., Hopf monads on monoidal categories, preprint, arXiv - is azriT aris statiaSi "Bimonads and Hopf monads on categories" adre Semotani l i

gal uas obieqti. garda amisa, mocemul ia axal i pirobebi, roml ebiс uzrunvel yofs rom zogadi bimonada iyos hopfis. garda amisa damtkicebul ia, rom arsebobs urTierTcal saxa Tanadoba (simetriul monoidal ur kategoriaze gamdidrebul i) winakonebis kategoriis biCaketil qvekategoriebsa da sabaziso kategoriis idel ebs Soris (b.mesabl iSvil ).

მიღებულია მონოიდის ეილენბერგ-მაკლეინის 3-განზომილებიანი კოჰომოლოგიის კლასის აღწერა როგორც წინააღმდეგობისა ჯგუფის მონოიდით გაფართოების არსებობისთვის (ა.პაუკორია).

gagrZel da kvI eva al gebrebi j varedini modul ebiс HhoxSil dis da cikl uri homol ogiebsa, kerZod j gufebiс j varedini modul isaTvis agebul ia j gufuri al gebrebiс j varedini modul isaTvis. vaCvenbeT, rom marcxena(marj vena) modul ebi j gefebiс j varedin modul ze da mis j gufuri al gebrebiс j varedin modul ze aris erTi da igive. gamovyaviT kl asi j gufebiс j varedini modul ebiсa, roml ebiсTvisac adgil i aqvs Mmakl einis izomorfizmiс homol ogiasa da Sesabamiс j gufuri al gebrebiс j varedini modul is HhoxSil dis homol ogias Soris. Semovitanil ia simpl iciurad zusti kategoriis cneba da vaCveneT, rom funqtoris simpl icial urad zusti kategoriidan j gufebiсa კატეგორიაSi warmoebul i functorebiс xarisxi nakl ebia an tol i Tavidan aRebul i funqtoris xarisxze. როგორც მაგალიტი ამ სედეგისა, vaCveneT რომ k-ური რიგის ნილიზაციის ფუნქტორის warmoebul i funqtores xarisxi nakl ebia an tol i k-1-ze da j gufebiс j varedini modul ebiс homol ogiebiс xarisxi aris 1-ის თილ (n.inasariZe).

G ganmartebul ia arakomutაციური puasonis al gebrebi (SemdgomSi NP - al gebrebi), roml ebiс akmayofil eben puasonis marcxena da marj vena igiveobebს. AaseTi al gebrebiс კატეგორია aris intereსis კატეგორია. მიRebul ia Tavisufal i obieqtebiс კონსტრუქცია ამ კატეგორიაSi. Ddadgenil ia erTi al gebrebiс მეორეზე მოყმედებიс პირობები da ganmartebul ia NP- al gebrebiс ნახევრად პირდაპირი ნამრავლი; Semotaniლ ia modul is cneba da Seiswavl eba gafarToebebi. Aagebul ia kompl eqsi, roml is saSual ebiTac ganimarteba NP- al gebrebiс კოჰომოლოგები. Ddadgenil ia კოჰომოლოგის j gufebiс Tviсეები:AgafarToebebiс kavSiri მეორე რიგის e.w. SezRudul კოჰომოლოგებTan, kavSiri ასოციური al gebrebiс hoxSil dis კოჰომოლოგებTan, l aibnicis al gebrebiс კოჰომოლოგებTan, al gebrebiс frCxil is operaciIT da quil enis კოჰოლოგებTan;Mმიგებულ ia saTanado grZel i zusti mimdevrobebi, roml ebiс amasTanave akavSireben NP- al gebrebiс კოჰომოლოგებს marj vena da marcxena NLP- al gebrebiсa da al gebrebiс frCxil is operaciIT კოჰომოლოგებTan. cal ke ganxil eba iseTi NP- al gebrebiс კოჰომოლოგის Tviсეები, რომელ Ta hoxSil dis an l aibnicis კოჰომოლოგიური ganzomil ebebi aris sasrul i (T.daTuaSvil i).

A j varedini al gebrebiсTvis (l, A, f) (sadac l aris H - unitarul i) agebul ia grZel i zusti mimdevroba, რომელიც akavSirebs (l, AA, f)-ის



homomorfizma  $f: A \rightarrow B$  algebras  $A$  va  $B$  uchun  $f$  ni  $f^{-1}$  ga aylantirish mumkin.  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

$f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

Seswaviylikning ta'riflashi morfizmning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

Seswaviylikning ta'riflashi morfizmning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

## geometriya-topologiya ganyofili

programma # 6: topologiya da algebra obyektlari modeli  
(geometriya-topologiya ganyofili)

programma koordinatori \_ Tornikeyev

ganyofiliylikning ta'riflashi morfizmning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

ganyofiliylikning ta'riflashi morfizmning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

ganyofiliylikning ta'riflashi morfizmning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

ganyofiliylikning ta'riflashi morfizmning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

ganyofiliylikning ta'riflashi morfizmning surjektivligini bildiradi.  $f$  ning surjektivligini tekshirish uchun  $f$  ning  $f^{-1}$  ga aylantirilishi  $f$  ning surjektivligini bildiradi.

აგებულა მარალი რიგის კოაღვური ოპერაციები, რომლებიც აკონტროლებენ სინოდის სხვადასხვა ოპერაციების ურთიერთკავშირს (თ. გადისვილი).

სესვალის მორავას K-თეორიის საკითხები (მ. ბაკრაძე).

ფიბრაციის კვების არსებობის გეომეტრიული პრობლემა დაყვანილია გარკვეული კოაღვების აგების ალგებრული პრობლემაზე (ნ. ბერიკაშვილი).

ნებისმერი ARMA-მოდელი სტვის ცხადი საკითხი აგებულა პირველი რიგის უარმოდგენა. ნაცნებია რომ ყოველი ARMA-მოდელი ჰომოტოპიურად ეკვივალენტურია პირველი რიგის ARMA-მოდელისა და რომ ორი პირველი რიგის ARMA-მოდელი ერთმანეთს ჰომოტოპიურად ეკვივალენტურია მაშინ და მხოლოდ მაშინ როცა ისინი არიან იზომორფულები (ვ. ლომაძე).

ურთიერთდინამური სისტემებისთვის შემოთანილია ფარდობითი სრულობის და სპეციფიურობის თვისებები. დამტკიცებულა, რომ ეს ორი თვისება და კიდევ ინვარიანტის თვისება გავარდობების მიმართ აუცილებელი და საკმარისია რათა ურთიერთდინამური სისტემა უარმოდგენადი იყოს ურთიერთდინამური დიფერენციალური განტოლების მსგავსი (ვ. ლომაძე).

## მათემატიკური ლოგიკის განყოფილება

პროგრამა # 7: ორადობის თეორია და მისი გამოყენებები ნახევარმესრების, გასრულებების, კომპაქტიფიკაციების, ფუნაქციონალური თეორემა და დენდროიდული ალგებრების შესახებ (მათემატიკური ლოგიკის განყოფილება)

პროგრამის კოორდინატორი \_ ლეო ესაკია

განვითარებულია ახალი ორადობის თეორია დისტრიბუციული მესრებისა და ჰაიტინგის მესრებისათვის ბიტოპოლოგიური სივრცეების ტერმინებში. შემოღებულია შესაბამისი ცნებები, მათ შორის წყვილად სტოუნის ბიტოპოლოგიური სივრცის ცნება. დამტკიცებულია, რომ დისტრიბუციული მესრებისა და ჰომომორფიზმების კატეგორია ორადულად ეკვივალენტურია წყვილად სტოუნის სივრცეებისა და ბი-უწყვეტი ასახვების კატეგორიის. აღწერილია ამ ორადობის შეზღუდვა ჰაიტინგის მესრებისათვის. შედგენილია ალგებრული და ბიტოპოლოგიური ურთიერთორადული ცნებების ლექსიკონი და დამტკიცებულია შესაბამისობის თეორემები. ბიტოპოლოგიური ორადობის გავლით დანახულია ამ კონტექსტში არსებული სხვა ორადობების (პრისტლის, სპექტრალური) ურთიერთკავშირი, რაც ავსებს და ამარტივებს ზოგად სურათს. შედგენილი და ინტერნეტში განთავსებულია შესაბამისი სტატიები ინტერნეტ-ენციკლოპედია Wikipedia-ში.

დისტრიბუციული ნახევარმესრისთვის განსაზღვრულია მისი დისტრიბუციული გარსის ცნება (ამ ნახევარმესრის მომცველი უმცირესი დისტრიბუციული მესერი, რომელიც მოცემული ნახევარმესრით უარმოიკმნება). ნახევარმესრის ოპტიმალური ფილტრი განსაზღვრება, როგორც შესაბამისი დისტრიბუციული გარსის მარტივი ფილტრის კვალი ამ

naxevarmeserze. damtkicebul ia, rom optimal uri fil tri aris martivi frinkis ideal is damateba.

gansazRvrul ia ganzogadebul i pristl is sivrceebis cneba. damtkicebul ia distribuciul i naxevradmesrebis pristl is tipis warmodgena ganzogadebul i pristl is sivrceebis saSual ebiT. agreTve, gansazRvrul ia ganzogadebul i esakias sivrceebis cneba da damtkicebul ia impl ikaciuri naxevradmesrebis esakias tipis warmodgena ganzogadoebul i esakias sivrceebis saSual ebiT.

მიღებულია ფაინის თეორემის ალგებრული დამტკიცება, რომელიც  $wK4$  და  $K4$  ქვეფრეიმული მოდალური სისტემების დამატებითი ალგებრული და ტოპოლოგიური ანალიზის საშუალებას იძლევა. კერძოდ, მტკიცდება რომ ასეთ სისტემებს გააჩნიათ სასრული მოდელების თვისება, რაც ფაინისა და ზახარიაშჩევის შედეგებს აზოგადებს  $wK4$  შემთხვევაზე.

## al baTobis Teoriisa da maTematikuri statistikis ganyofil eba

programa # 8: optimal uri investirebisa da hej irebis amocanebi SezRudul i informaciisa da model is ganuzRvrel obis pirobebSi. (al baTobis Teoriisa da maTematikuri statistikis ganyofil eba)

programis koordinatori \_ mi xeil mania

## institutis programiT gaTval iswinebul i samuSaoebi.

Seswavi l ia sargebl ianobis maqsimizirebis amocana zogadi miznobrivi funqciebisTvis. Aam amocanis fasis funqciisTvis gamoyvanil ia Seqceul i stoqasturi diferencial uri gantol eba, roml is amonaxsnis saSual ebiT miRebul ia optimal uri strategiebis daxasiaTeba (mania).

Seswavi l ia sargebl ianobis maqsimizirebis amocana nawil obriv dakvirvebad SemTxvevaSi eqsponencial uri miznobrivi funqciebisTvis. miRebul ia informaciul i nakadis sakmarisobis aucil ebel i da sakmarisi pirobebi (mania).

Seswavi l ia difuziuri procesis trendSi Semaval i ucnobi parametris rekursiul i statistikuri Sefasebebi. dadgenil ia rekursiul i Sefasebebis asimptotური Tvisეები. naCvenebia rom rekursiul i Sefasebebi asimptoturad eqivalentურია dasaj erobis maqsimუმის Sefasebeბისა. naSromi warmoadgens avtoreბის gamokvl eების cikl is gagrZel eბას miZRvnil s robins-monros stoqasturi diferencial uri gantol eბისadმი im Tval sazრისiT, rom rekursiul i Sefasebeბის ასიმპტოური Tvisეების kvl eva efuZნება Sedეებს xsენებul i gantol eბის amonaxsნების ასიმპტოური yofaqceვის Sesaxებ (I azrieva, toronj aZe).

robinsis ormagi utol obidan miRebul ia binomური al baTobისაTvis markovის ormagi utol obის axal i damtkiceბა. markovის utol obidan gamoyvanil ia მაqsimal uri binomური al baTobის zeda sazRvრები (ServaSiZe).

Semotavazebul ia puasonis polinomialuri funkcional ebis stogasturi gawarmoebis operatoris axal cxadi konstrukcia da nacvenebia rom igi emTxveva qaosuri gaSi is saSual ebiT ganmartebul stogastur warmoebul s (furTuxia).

### **erovnul i samecniero grantebiT Sesrul ebul i samuSaoebi**

Seswavi ilia sargebl ianobis robastuli maqsimizaciis amocana difuziuri bazris model Si. model i Sedgeba riskiani vaWrebadi aqtivisagan, romelic ganuzRvrel i koeficientebis mqone difuziuri procesia da gansazRvrul koeficientebiani aravaWrebadi aqtivisagan. robastuli sargebl ianobis funkcional i gansazRvrul ia harasargebl ianobis funqciit. moyvanilia robastuli amocanis cxadi amoxsna Hhamilton-iakob-bel man-aizeqsis gantol ebis gamoyenebit (toronj aze).

Seswavi ilia saSual o kvadratuli hej irebis amocana SezRudul i informaciis pirobebSi, rodesac dakvirvebadi nakadi ar Seicavs srul informacias sabaziso aqtivis fasze. nacvenebia, rom es amocana ekvivalenturia iseti optimizaciis amocanis, romelic gamosaxulia dakvirvebadi procesebis terminebSi da Seicavs makoreqtirebel wevrs. Mmocemul ia optimaluri strategiis agebis wesi (mania).

Seswavi ilia stogasturi model i, romelic exeba simkvrivis mqone dadebiti SemTxvevit i sididis kvantilis Tvisebas, mianiwos maqsimumi am sididis wrfivi gardaqmnis maTematikur l odins aseT gardaqmnaTa garkveul kl asze. es faqti izi eva uwyveti zomis mqone saqonl is gayidvebis martiv model s, roca cnobilia masze SemTxvevit i motxovnis ganawil ebis simkvrive da SeiZl eba gamodges ucnobi kvantilis statistikuri Sefasebis proceduris asagebad, roca motxovnaze mxol od cenzurirebul i dakvirvebebi gagvaCnia (ServaSiZe).

Seswavi ilia am stogasturi gawarmoebis operatorisa da skoroxodis integrebis operatoris zogierTi Ziritadi Tviseba. ganxil ul ia skoroxodis integralis cxadi saxit gamotvli is magal itebi. steinis igiveoba Cawerilia gawarmoebis operatoris gamoyenebit (furTuxia).

### **Teoriul i fizikis ganyofil eba**

programa # 9: kvanturi vel ebis Teoriasa da mis gamoyenebebtan dakavSirebul i maTematikuri amocanebis kvl eva el ementarul i nawil akebisa da kondensirebul i garemos fizikaSi" (Teoriul i fizikis ganyofil eba)

programis koordinatori \_ merabeliasvili

## 1. institutis programiT gaTval iswinebul i samuSaoebi

- *integredoba simis da vel is TeoriebSi*

Seswavi il i iqna simis Teoriis evkliduri amoxsnebi vakuumur seqtorSi  $AdS_3 \times S^3$  sivrcisaTvis. moxerxda am amoxsnaTa ageba da sruli kl asifikacia. es amoxsnebi moicavs 9 kl ass, romel Tac AdS sivrcis konformul sazRvarze topologiurad gansxvavebuli yofaqcevebi aqvT. amoxsnaTa mxol od or kl ass gaaCnia iseTis sazRvro yofaqceva, romelic SeiZleba gamoyenebuli iqnas gl uonta gabnevis amplitudis gamosaTvl el ad al dai-mal dasenas hipotezis mixedviT. Catarebuli iqna Sesabamisi gamoTvl a im SemTxvevaSi, rodesac zedapiris proeqcia AdS sivrcenze drois magvaria, rac Seesabameba 4-wertilian gabnevis amplitudas  $s_{arxSi}$ .

$SL(2,R)/U(1)$  Savi xvrelis model Si gamoTvl il i iqna arklis amplituda da diskretuli speqtri. Iiuvilis Teoriis msgavsad, es gamoTvl ebi efuzneba verteqsul i operatoris struqturas. am struqturaSi garkveuli sakiTxebi (koeficientebi) kidev dasazustebel ia, rac moitxovs modelis simetriebis zustarweras. Iiuvilis Teoriisgan gansxvavebiT, konformuli simetria ar aris sakmarisi verteqsul i operatoris struqturis dasazustebel ad. amastan dakavSirebiT gaanal izda  $SL(2,R)/U(1)$  Savi xvrelis modelis konformuli jgufis gafaqtorebiT miRebuli sistemis simetriebi da integredoba polmaieris tipis reduqciis metodiT.

Seswavi il i iqna kvanturi nawilakis dinamika koordinatul warmodgenaSi statikur sivrcenze-droSi moZraobisas. SemoTavazebuli iqna dakvantvis sqema, romelic efuzneba energiis kvadratis operatoris anal izs. es operatoris kvadratul ia impul ebis mimaRT da Seicavs skal arul simrudis Semcvel wevrs. detal urad iqna arwerili dinamika AdS sivrceni, sadac skal arul i simrudis wevris koeficienti fiqsirdeba sivrcis izometriis jgufiT. Sedegad moxerxda am jgufis axali warmodgenis ageba da energiis cnobili speqtris axleburad gamoTvl a. umaso nawilakis SemTxvevaSi, asevereal izebuli iqna sivrcis konformuli simetria. nacvenebi iqna, rom SemoTavazebuli dakvantvis sqema equivalenturia kl ain-gordonis tipis gantol ebaze dafuznebul kovariantul dakvantvis metodisa. Semdeg nacvenebi iqna, rom dakvantvis es ori metodi erTmaneTis equivalenturia nebismier  $N+1$  ganzomil ebian statikur sivrcenze-droSi Tuki skal arul i simrudis wevrebs energiis kvadratis operatorSi da kl ain-gordonis tipis gantol ebaSi aqvT erTnairi koeficienti  $(N-1)/4N$  (j orj aZe).

## 2. magnitur vel Si moTavsebuli grafenebis maTematikuri model ebi kvl eva.

Seswavi il ia paralelur magnitur vel Tan dakavSirebuli movlenebi holis orSrian sistemebSi, kerZod ki – elementarul aRgznebaTa sakiTxebi Tanazomvad fazaSi. dadgenilia ZiriTadi

mdgomareobis marTkuTxa da wriul i geometriul i aRweris damakavSirebel i gardaqmna. aRniSnul i gardaqmnis daxmarebiT agebul ia sivrceSi l okal izebul el eqtronul -xvrel ur aRgznebaTa mikroskopul i (fokis) mdgomareobebi, roml ebic xasiaTdeba spinuri ( $\beta_s$ ), fsevdospinuri ( $\beta_p$ ) da Sereul i ( $\beta_r$ ) parametrebiT. gamokvl eul ia el eqtronul da xvrel ur aRgznebaTa Sesabamisi simkvriveTa sivrcul i ganawil eba da cxadi saxiT aris naCvenebi aRgznebaTa Sinagani struqturis meronul i buneba. gamoTvl il ia el eqtronul -xvrel uri wyvil is aRgznebis energia, rogorc am sami ( $\beta_s$ ,  $\beta_p$ ,  $\beta_r$ ) parametris funqcia. napovnia aRgznebis energiis minimumi parametrebis mixedviT da gamokvl eul ia wyvil is saxeobis ( $s, p, r$ ) damokidebul eba sistemis ganmsazRvrel (SreTaSorisi tunel irebis  $\Delta_{SAS}$ , zeemanis energiis  $\Delta_z$  da simkvrivis SreTaSorisi sxvaobis  $\sigma_0$ ) parametrebze. agebul ia am damokidebul ebis fazuri diagrama. miRebul Teoriul Sedegebze dayrdnobiT axsnilia arsebul i eqsperimentul i monacemebi da gamoqveynebul ia naSromi (ciciSvil i) Seswavl il ia eqvskuTxa (fiWuri) meseris Sesabamisi harperis gantol eba magnituri vel is daZabul obis kerZo SemTxvevebiSi (magnituri nakadis  $1/3, 2/3, 1/5, 2/5, 1/7, 2/7, 3/7$  mniSvnel obebisaTvis). aRniSnul kerZo SeTxvevebze dakvirvebis Sedegad napovnia harperis gantol ebis zogadi maxasiaTebel i Tvisebebi. am Tvisebebze dayrdnobiT amocana miyvanilia matricaTa egred wodebul i singul arul i mniSvnel obebis amocanamde. gamovl inda erT-erTi garemoeba, rac fiWur mesers ganaxvavebs samkuTxa da oTxkuTxa meserisagan. kerZod, im SemTxvevaSi, rodesac fiWuri meseris eqvskuTxeds erTeul ovani magnituri nakadi ganWol avs, xdeba egred wodebul i bril uenis zonis orad gaxl eCa, rac ar daimzireba samkuTxa da marTkuTxa meseris SemTxvevaSi. amasTan dakavSirebiT aRniSnul i SemTxveva (erTi magnituri kvanti yovel eqvskuTxedze) ufro detal urad aris ganxil ul i rogorc martivi (sacdel i) model i. cxadi saxiT aris napovni kvazinawil akebis Sesabamisi sakuTari mdgomareobebi da dadgenil ia maTi transformaciul i Tvisebebi bril uenis zonis maxasiaTebel i wanacvl ebebis mimarT. mocemul etapeze midminareobs Sesabamisi simkvrivis operatorebis Zieba, rac saWiroa kvazinawil akebs Soris moqmedi urTierTqmedebis saxis dasadgenad.

- **Zl ieri l azerul i vel is urTierTqmedeba materiasTan da kvanturi informaciis Teoria; birTvul i magnituri rezonansis kvanturi kompiuteris Teoriul i safuZvl ebi**

Seswavl il ia gadaxl arTvis Tvisebebi binarul sistemebSi. invariantebis kl asikuri Teoriis fargl ebSi ganxil ul ia kubittebisa da kubit-kutritebis wyvil ebisagan Sedgenil i binarul i sistemebis Tvisebebi.

Seswavl il ia kubit-kutritebis kompozituri sistemis Sereul i mdgomareoba. ganxil va Catarebul ia qvesistemebis Soris arsebul i ara-l okal uri korel aciebis arsebobis gaTval iswinebiT. agebul ia

mel inis funqciebi  $SU(2) \times SU(3)$  l okal uri invariantebis rgol isaTvis (kvinixiZe).

- yal bi vakuumis daSi is detal ebis Seswavi a gravitaciis gaTval iswinebiT. kosmol ogiuri magnituri vel is amplitudis SezRudva fonuri kosmiuri mikrotal Ruri gamosxivebis (CMB) anizotropiis monacemebi dan.

Seswavi il ia kosmiuri mikrotal Ruri gamosxivebis temperaturul i fl uktuaciebis ara-gaussuroba romelic warmoiqmneba kosmol ogiur magnitur vel ebze damokidebul veqtorul SeSfoTebebi dan.

Seswavi il ia rubakov-SapoSnikovis 6 ganzomil ebiani model is stabil oba wrfivi SeSfoTebebis mimarT. naCvenebia rom model i arastabil uria sakmaod moul odnel i sqemiT: udablesi harmonikebisatvis kuTxuri momentiT  $m=0$  da  $m=1$  ar arsebobs uaryofiti modebi, maSin rodesac yovel arxSi ufro maRal i miT aris TiTo uaryofiti moda.

gamoTvl il ia [LL1] kosmiuri mikrotal Ruri gamosxivebis temperaturul i anizotropiis or- da sam-wertil ovani korel aciuri funqcia da naCvenebia rom diagonal uri wevrebis garda igi Seicavs agreTve aradiagonal ur wevrebs.

Seswavi il ia [L2] rubakov-SapoSnikovis 6 ganzomil ebiani model is stabil oba wrfivi SeSfoTebebis mimarT. naCvenebia rom model i stabil uria tenzorul da veqtorul seqtorebSi da arastabil uria skal arul i SeSfoTebebis seqtorSi.

- *fazuri gadasvl ebis gamokvl eva vel is Teoriis model ebSi; periodul i kl asikuri amoxsnebis qvanturi yofaqceva da gadasvl is al baTobebis gamoangariSeba.*

Seswavi il ia kompaqtur sivrceSi skal arul i vel is periodul i konfiguraciebis qvanturi yofaqceva. miRebul ia qvanturi periodul i instantonis sicocxl is xangrZl ivobis da daSi is al baTobis gamosaxul ebebi.

sami skal arul i vel is urTierTqmedebisTvis ( $U(2)$  da  $SU(2)$  simetriebiT) gamokvl eul ia vel is kl asikuri konfiguraciebis qvanturi yofaqceva.

Seswavi il ia kl asikuri monopol is maxl obl obaSi misi qvanturi yofaqceva  $SU(2)$  – yal iburi vel is TeoriaSi higgsis seqtorSi.

kvlevis Sedegebi sakal arul i vel is perodul i konfiguraciebis qvanturi yofaqcevis Sesaxeb gadacemul ia da gamoqveyndeba statiis saxiT saTauriT „Quantum Properties of Periodic Instantons on a Circle“ statiaSi arweril ia moZravi periodul i instantonis qvanturi Tvisebebi, miRebul ia misi sicocxl is xangrZl ivobis da daSi is al baTobis formul ebi (SurRaia).

- *kvanturi qromodinamikisa da rel ativisturi birTvul i fizikis gantol ebebis kvleva*

Seswavi il ia heliumisa da deitronis rel ativisturi ionebis tantal is birTvTan urTierTqmedebaSi dabadebul i protonebisa da

pi mesonebis kinematikuri maxasiaTebI ebi sawyis energiaze 4.2. gev/nukl onze. erTmaneTTan Sedarebul ia central ur da aracentral ur daj axebebsi dabadebul i nawil akebis maxasiaTebI ebi (mravl obiTobebi, impul sebi, gamofrenis kuTxeebi, temperaturebi). naCvenebia, rom pi mezonebisatvis maxasiaTebI ebi sustadaa damokidebul i pirvel adi birTvis masur ricxvze, protonebisTvis ki es damokidebul eba arsebitia.

central ur daj axebebsi dabadebul i nawil akebis saSual o impul si gacil ebit nakl ebia, vidre aracentral urSi, gamofrenis kuTxe ki central uri daj axebebisatvis metia, vidre aracentral urisTvis (garsevaniSvil i).

- *fazuri gadasvl ebi sasrul simkvrivebsa da temperaturaze ganxil ul ia ori da sami aromatis mqone kvarkebis amRweri nambuional azinios model i sasrul temperaturebze ganzomil ebiti regul arizaciis gamoyenebit. es Cveni wina Sromebis Tematikis gagrZel ebaa sadac napovni iqna rom ganzomil ebit regul arizaciaSi miRebul i Sedegebi Tavsebadia kvanturi qromodinamikatan SeSfoTebisteoriis gamoyenebis areSi, rac arsebitad afarToebs (sxva regul arizaciebTan Sedarebit) model is gamoyenebis saSual ebebs. kerZod, gamoTvl il ia mezonebis masebi da topologiuri amTvisel oba (kvinixiZe).*

- *kvanturi qromodinamikis gamokvl eva saSual o da dabal i energiebis areSi. standartul i model is parametrebis ricxviti mniSvnel obebis dazusteba.*

Seswavl il i iqna tau l eptonis hadronul i daSl ebis procesebi veqtorul ara-ucnaur arxSi renormal izaciurad invariantul i dispersiul i mdgomis gamoyenebit kvantur qromodinamikaSi. Sedegad miRebul i iqna Zl ieri urTierTmoqmedebis konstantis axal i ricxviti Sefaseba romel ic l literaturaSi farsebul SefasebebTan Sedarebit ukeTesad Tavsebadia sxva eqsperimentebTan (maRraZe).

### 3.sagranto proeqtebit gaTval iswinebul i samuSaoebi

- simetriebi da Ziritadi mdgomareobis probl ema yal ibur WZNW TeoriebSi
- yal bi vakumis daSl is aspektebi, tunel uri procesebi da Zl ieri vel ebis efeqtebi
- Ziritadi mdgomareoba pl anarul mezoskopur sistemebSi. daxl arTul i Ziritadi mdgomareobebis geometriul i faza
- geometriul i faza daxl arTul i Ziritadi mdgomareobisatvis
- nukl onis Ziritadi mdgomareobis formebi da vel is kvanturi Teoria sinaTl is frontis formul irebaSi
- kvanturi qromodinamikis dabal -energetikul i struqtura da aratrivial uri Ziritadi mdgomareoba



#### **Tavi 4. institutis mier an Tanamonawil eobiT Catarebul i samecniero konferenciebi**

akademikos niko musxel iSvil is 120 wl isTavisadmi miZRvnil i andria razmaZis maTematikis institutis samecniero konferencia, 29 noemberi – 3 dekemberi, 2010 wel i, Tbilisi.

International Workshop on Topological Methods in Logic II, June 8—10, 2010, Tbilisi, Georgia. <http://www.rmi.ge/tolo2>.

FIRST ANNUAL CONFERENCE OF MATHEMATICIANS OF GEORGIA  
September 12 to 19, 2010, Batumi, Georgia

Georgian National Science Foundation, Georgian Technical University, Batumi State University, Razmadza Mathematical Institute, International School and Workshop “Modern Algebra and its Applications”, September 20-26, 2010, Batumi, Georgia

#### **Tavi 5. gamoqveynebul i da gamosaqveynebl ad gadacemul i naSromebi**

2010 wel s gamoqveynda institutis TanamSromel Ta 74 naSromi, maT Soris 31 naSromi impaqt-faqtoris mqone gamocemebSi. gamosaqveynebl ad gadaeca 77 naSromi (ix. danarTi 1).

#### **Tavi 6. sazRvargareT da saqarTvel oSi gamarTul samecniero forumbze wakiTxul i moxsenebebi**

2010 wel s institutis TanamSroml ebma gaakeTes 26 moxseneba sazRvargareT gamarTul samecniero konferenciebze da 47 moxseneba saqarTvel oSi gamarTul konferenciebze (ix. danarTi 2).

## Tavi 7. saerTaSoriso samecniero TanamSroml oba

2010 wels Sedga institutis Tanamromel Ta 51 mivl ineba ucxoeTis samecniero centrebSi erTobl ivi kvl ebebisaTvis, l eqciebis wasakiTxad da samecniero konferenciebSi monawil eobis misaRebad (CamonaTval i - ix. danarTi 3).

### ucxouri samecniero gamocemebis redkol egiebis wevrebi

#### ivane kiRuraZe

Boundary Value Problems

Electronic Journal of Qualitative Theory of Differential Equations

Nonlinear Oscillations

Fasciculi Mathematici

Functional Differential Equations

Journal of Applied Mathematics, Statistics and Informatics

#### vaxtang kokiI aSviI i

Function Spaces & Appl. (Impact-Factor Journal, Horizon, Sweden, India, asoci rebul i gamomcemeli.

Georgian International Journal of Science and Technologies (USA, Nova Publishers);

International Journal of Mathematics, Game Theory and Algebra" (USA)

Euroasian Mathematical Journal(supported by ISAAC)

Armenian J. Mathematics

Azerbaijan J. Mathematics

#### al eqsandre mesxi

J. Prime Research of Mathematics' (Lahore)

#### al eqsandre xaraziSviI i

Applied Analysis (pol oneTi)

#### nino farcvania

Miskolc Mathematical Notes

#### rol and duduCava

Integral Equations and Operator Theory

### saerTaSoriso samecniero gamocemebis recenzentebi da referentebi

#### v. kokiI aSviI i

J. Mathematical Analysis and Application" (USA, New York)

Journal of Inequalities & Applications (USA)

Function Spaces& Applications

Math. Inequalities & Applications (Croatia)  
Fourier Analysis & Applications (USA)

**al eqsandre mesxi**

Transaction of the American Mathematical Society

**ni no farcvani a**

Boundary Value Problems

Advances in Difference Equations

Electronic Journal of Qualitative Theory of Differential Equations

Abstract and Applied Analysis

Tatra Mountains Mathematical Publications

Mathematical Reviews

**givi berikel aSvil i**

Mathematical Reviews

**sul xan muxigul aSvil i**

Journal of Applied Mathematics and Physics

Acta Universitatis Palackianae Olomucensis Facultas Rerum Naturalium

**rol and duduCava**

Mathematical Methods in Applied Sciences

Complex Variables and Elliptic Equations

Mathematical Problems in Engineering

Numerical Algorithms

Mathematical Reviews

Zentralblatt für Mathematik

## **ucxouri samecniero organizaciebis wevrebi**

**vaxtang koki I aSvil i**

amerikis maTematikuri sazogadoebis wevri

portugal iis samecniero-sagranto komitetis sazRvargareTel i

eqsperti

**T. qadei Svi I i**

Teoriul i fizikis saerTaSoriso centris (ICTP), trieste, italia,

ufrosi asocierebul i wevri. amerikis maTematikuri sazogadoebis

wevri..

**g. ximSi aSvil i**

Teoriul i fizikis saerTaSoriso centris (ICTP), trieste, italia,

ufrosi asocierebul i wevri. monawile programisa "Research in Pairs",

Mathematisches Institut Oberwolfach, Oberwolfach, Germany.

## erTobl ivi samecniero kvl evevbi

### ivane ki RuraZe:

ikvl evda aral okal ur sasazRvro amocanebs naxevradwrfivi diferencial uri sistemebisaTvis masarikis universitetis (q. brno) docent b. puJasTan da CexeTis mecnierebaTa akademiis maTematikis institutis mecnier TanamSromel i. SremrTan erTad, roml ebic samecniero mivl inebiT imyofebodnen institutSi 10 agvistodan 10 seqtembramde.

3 oqtombridan 20 noembramde mivl inebuli iyo fl oridis teqnologiur institutSi (q. mel burni, fl orida, aSS), sadac amerikel kol egebTan erTad Seiswavl a aral okal uri sasazRvro amocanebi evol uciuri diferencial uri gantol ebebisaTvis.

### mi xei l mania:

erTobl ivi samecniero kvl ebebisaTvis miwveuli iyo humbol tis universitetSi (berlini), sadac waikiTxa moxseneba Backward stochastic PDEs related to utility maximization and hedging.

### nino farcvania:

2010 wl is 22 ivnisidan 26 ivnisamde mivl inebiT imyofeboda slovakeTsi (raJেকে teplice), sadac monawileoba miRo Jilinas universitetis mier organizebuli saerTaSoriso konferenciis `diferencial uri da sxvaobiani gantol ebebi da gamoyenebebi \_ CDDEA 2010- muSaobaSi, rogorc saprogramo komitetis wevrma da mowveul ma momxsenebel ma.

### l aSa efremize:

TanamSroml obs meril endis (a.S.S.) universitetis norbert vineris kvl evebis centrTan.

maTematikuri anal izis ganyofil ebis wevrebi aqtiurad TanamSroml oben msofilios sxvadasxva maTematikur centrebTan, isetebTan, rogoricaa: imperial -kol eji, l ondoni (didi britaneTi), meril endis (aSS), al garvesa da aveiros (portugal ia), l ul eas (SvedeTi), pizis, fl orenciis, neapol isa da paduas (ital ia), Cikagos depolis, sirakuzis (aSS), hel sinkis (fineTi), fraiburgis da ienis (germania), moskovis (ruseTi) universitetebi; CexeTis respublikis mecnierebaTa akademiis maTematikis instituti, stekl ovis maTematikis instituti (ruseTi), pol oneTis mecnierebaTa akademiis maTematikis instituti, Crdil oet texasis universiteti (aSS), miCiganis universiteti (aSS), vrocl avis universiteti (pol oneTi). TanamSroml oba gamoixateba erTobl ivi samecniero Sromebis Sesrul ebaSi, l eqcia-seminarebze, konferenciebze, saerTaSoriso skol ebSi miwvevbiSi.

## ucxoeTSi wakiTxul i sal eqcio kursebi

v. kokiI aSvil i miwveul i iyo l eqciebis wasakiTxad l isabonSi, 21-26 ivniss gamarTul saerTaSoriso sazafxul o skol aSi "harmoniul i anal izis probl emebi da gamoyenebebi". man waikiTxa sami orsaatiani l eqcia "integral uri operatorebi banaxis funqciur sivrceebSi da gamoyenebebi funqciaTa Teoriis sasazRvro amocanebSi"

v. kokiI aSvil ma monawil eoba miRo 11-17 seqtembers CexeTis respublikaSi gamarTul saerTaSoriso skol is (NASFA 9, arawrfivi anal izi, funqciuri sivrceebi da gamoyenebebi) muSaobaSi. man skol is Tanmdev special ur sesiaze gaakeTa moxseneba "harmoniul i anal izis operatorebi banaxis arastandardul funqciur sivrceebSi da gamoyenebebi kerZowarmoebul ebian diferencial ur gantol ebaTa sasazRvro amocanebSi"

a. mesxi oTxi TviT miwveul i iyo paduas (ital ia) universitetSi l eqciebis wasakiTxad da samecniero seminaris muSaobaSi monawil eobis misaRebad.

## Tavi 8. sagamomceml o saqmi anoba

instituti gamoscems 3 saerTaSoriso samecniero Jurnal s:

*a. razmaZis maTematikis institutis Sromebi  
saqarTvel os maTematikuri Jurnal i  
memuarebi diferencial ur gantol ebebsa da maTematur fizikaSi*

*saqarTvel os maTematikuri Jurnal s* miniWebul i aqvs impaqt-faqtori. mas gamoscems saerTaSoriso gamomceml oba DE GRUITER.

### **saqarTvel os maTematikuri Jurnal is (Georgian Mathematical Journal) me-17 toms (2010) aRwera**

2010 wel s gamovida 4 nomeri (794 gverdis mocul obiT), meoTxe nomeri mieZRvna profesor iuri proxorovos dabadebidan 80 wl istavs. tomi 42 statias Seicavs. aqedan 10 qarTvel i avtorebisaa, 30 – ucxoel i avtorebis, xol o 2 erToblivia qarTvel i avtorisa didi britanel da italiei avtorebTan. gamoqveynebul i statiebidan Sesrul ebul ia: erToblivad andria razmaZis maTematikis institutsa da saqarTvel os teqnukur universitetSi – 2, andria razmaZis maTematikis institutsa da qarTul -amerikul universitetSi – 2, ivane javaxiSvil is Tbil isis saxel mwifo universitetSi – 3,

saqarTvel os teqnukur universitetSi – 1, niko musxel iSvil is gamoTvl iTi maTematikis institutSi – 2.

**statiebis ganawil eba dargebis mixedviT**

	dargebi	statiebis ganawil eba
1.	algebra, logika da ricxvTa Teoria	5
2.	geometria da topologia	15
3.	matematikuri analizi	8
4.	Cveul ebrivi diferencial ur gantol ebebi	4
5.	matematikuri fizikis gantol ebebi	4
6.	algebra Teoria da matematikuri statistika	6
	sul	42

**Jurnal is "memuarebi diferencial ur gantol ebebsa da matematikur fizikaSi" ("Memoirs on Differential Equations and Mathematical Physics") 2010 wl is gamocemebis arwera**

2010 wels gamoqveynda Jurnal is sami tomi: 49-e – 151 gverdis mocul obiT, 50-e – 164 gverdis mocul obiT, 51-e – 170 gverdis mocul obiT; 49-e tomi mieZRvna akademikos nikol oz al eqsis Ze izobovis dabadebidan 70 wl isTavs.

49-e tomSi gamoqveynda 6 didi mocul obis samecniero statia (1 – avtoris saudis arabeTidan, 1 – qarTvel i avtoris, 1 – saerto rusi da Cinel i avtorebis, 1 – rusi avtoris, 1 – amerikel i avtoris, 1 – saerto finel i da italie i avtorebis).

50-e tomSi gamoqveynda 1 monografia (Cexi avtoris) da 2 didi mocul obis samecniero statia (1 – rusi avtorebis, 1 – qarTvel i avtoris).

51-e tomSi gamoqveynda 8 didi mocul obis samecniero statia (4 – qarTvel i avtorebis, 1 – avtoris bahreinidan, 1 – somexi avtorebis, 1 – indoe i avtorebis, 1 – saerto avtorebis saudis arabeTidan da al Jiridan) da 2 mokle moxseneba (qarTvel i avtorebis).

**avtorTa ganawil eba qveynebis mixedviT**

	qveynebi	avtorTa raodenoba
1.	aSS	1
2.	bahreini	1
3.	indoeTi	2
4.	italia	1
5.	fineTi	1
6.	saudis	2

	qveynebi	avtorTa raodenoba
	arabeTi	
7.	saqarTvel o	10
8.	somxeTi	2
9.	ruseTi	2
10.	CexeTi	1
11.	CineTi	2
12.	sul	25

**Jurnal is Jurnal is "A. Razmadze Mathematical Institute" "  
("Proceedings of A. Razmadze Mathematical Institute") 2010 wl is  
gamocebis arwera**

2010 wels gamoqveynda Jurnal is sami tomi: 152-e – 153 gverdis moculobiT, 153-e – 148 gverdis moculobiT, 154-e – 162 gverdis moculobiT. 152-e tomSi gamoqveynda 13 statia, maTgan 7 ucxoeli avtorebisa. 153-e tomSi gamoqveynda institutis TanamSroml is a. Gvighvili is monografia. 154-e tomSi gamoqveynda 15 statia, maTgan 6 ucxoeli avtorebisa.

**avtorTa ganawileba qveynebis mixedviT**

	qveynebi	avtorTa raodenoba
1.	თურქეთი	4
2.	ჩინეთი	4
3.	აზერბაიჯანი	6
4.	ყაზახეთი	2
5.	შვედეთი	1
6.	სომხეთი	1
7.	ალჟირი	2
8.	სულტან-ომანი	1
9.	პაკისტანი	4
10.	საქართველო	18

2010 weli s gamoqveynebul i da gamosaqveynebl ad gadacemul i samecniero naSromebi

2010 weli s gamoqveynebul i samecniero naSromebi

varsklaviT arniSnulia publikaciebi impaqt factoris mqone gamocemebSi (31 publikacia 74-dan)

1. \***M. Ashordia**, On some boundary value problems for linear generalized differential systems with singularities. (Russian) *Differ. Uravn.* **46** (2010), No. 2, 163-177; English transl.: *Differ. Equ.* **46** (2010), No. 2, 167-181.
2. **Р. Банцური**, Решение смешанной задачи плоской теории упругости для многосвязной области с частично неизвестной границей. *Актуальные проблемы механики сплошной среды. Труды II международной конференции, 4-8 октября, Дилижан, Армения, т. I*, 128-132.
3. **R. Bantsuri** and **N. Shavlakadze**, The mixed problem for a piecewise Homogeneous orthotropic plane with a cut, intersecting perpendicularly the line if interface. *Proc. A. Razmadze Math. Inst.* **154** (2010), 53-64.
4. \***G. Berikelashvili** (with D. G. Gordeziani), On a nonlocal generalization of the biharmonic Dirichlet problem. (Russian) *Differ. Uravn.* **46** (2010), No. 3, 318-325; English transl.: *Differ. Equ.* **46** (2010), No. 3, 321-328.
5. **G. Berikelashvili** (with M. M. Gupta, M. Mirianashvili), High order difference scheme for Helmholtz equation with mixed boundary conditions. *AIP Conf. Proc.* **1281** (2010), 757-760.
6. **G. Bezhanishvili, N. Bezhanishvili, D. Gabelaia**, A. Kurz, Bitopological duality for distributive lattices and Heyting algebras, *Mathematical Structures in Computer Science* (2010), 20: 359-393.
7. **G. Bezhanishvili, L. Esakia, D. Gabelaia**, The modal logic of Stone spaces: diamond as derivative. *The Review of Symbolic Logic*, Volume 3, Issue 01, pp 26 - 40.
8. **G. Bezhanishvili, L. Esakia, D. Gabelaia**, K4.Grz and hereditarily irresolvable spaces. in *Proofs, Categories and Computations. Essays in Honor of Grigori Mints*, edited by Solomon Feferman, Wilfried Sieg. College Publications, 2010.
9. **O. Chkadua** (with S. Mikhailov, D. Natroshvili), Analysis of direct boundary-domain integral equations for a mixed BVP with variable coefficient, II: Solution regularity and asymptotics, *J. Integral Equations Appl.* **22** (2010), No. 1, Spring, 19-37.
10. \***O. Chkadua** (with S. Mikhailov, D. Natroshvili), Localized boundary-domain integral equations formulation for mixed type problems. *Georgian Math. J.* **17** (2010), No. 3, 469-494.
11. \***G. Donadze, N. Inassaridze** (with M.Ladra), Cyclic homologies via derived functor. *Homology, Homotopy Appl.* **12** (2010), No. 2, 321-334.
12. **R. Duduchava**, Lions's lemma, Korn's inequalities and Lam'e operator on hypersurfaces. *Operator Theory: Advances and Applications*, **210** (2010), 43-77, Springer AG, Basel.



13. \***R. Duduchava, D. Kapanadze** (with L. Castro), Electromagnetic scattering by cylindrical orthotropic waveguide irises. *Georgian Math. J.* **18** (2011), No. 1, 99pp.
14. **O. ZagniZe**, namdvil i cvl adis funqciaTa uwyvetoba da diferencirebadoba, *Tsu*, 2010, 497 gv.
15. **L. Ephremidze** (with E. Lagvilava), Remark on outer analytic matrix-functions, *Proc. A. Razmadze Math. Inst.* **152** (2010), 29-32.
16. \***A. Gachechiladze, R. Gachechiladze** (with J. Gwinner, D. Natroshvili), Contact Problems With Friction For Hemitropic Solids: Boundary Variational Inequality Approach, *Applicable Analysis* (Published online 7 December 2010 in Taylor&Francis Online Library, URL: <http://dx.doi.org/10.1080/00036811.2010.505191>).
17. \***A. Gachechiladze, R. Gachechiladze** (with J. Gwinner, D. Natroshvili), Boundary variational inequality approach to unilateral contact problems with friction for micropolar hemitropic solids. *Mathematical Methods in the Applied Sciences*, (Published online 29 October 2010 in Wiley Online Library: [wileyonlinelibrary.com](http://wileyonlinelibrary.com) DOI: 10.1002/mma.1388)
18. **V. Garsevanishvili**, *Bull. Georg. Nat. Acad. Sci.* **4** (2010), 35.
19. \***H. Inassaridze and E. Khmaladze**, Hopf formulas for the equivariant integral homology of groups. *Proc. Amer. Math. Soc.* **138** (9) (2010), 3037-3046.
20. **G. Jorjadze** (with H. Dorn, Ch. Kalousios, L. Megrelidze, S. Wuttke), Vacuum type space-like string surfaces in  $AdS_3 \times S^3$ . *J. Phys. A: Math. Theor.* **44** (2011), 025403.
21. **G. Jorjadze** (with H. Dorn, N. Drukker, Ch. Kalousios), Space-like minimal surfaces in  $AdS \times S$ . *JHEP* **1004** (2010); 004.
22. **T. Kadeishvili**, Twisting Elements in Homotopy G-algebras, Higher Structures in Geometry and Physics, In Honor of Murray Gerstenhaber and Jim Stasheff. *Series: Progress in Mathematics* **287** (2010), 181-200.
23. \***D. Kapanadze** (with L. P. Castro), Exterior Wedge Diffraction Problems with Dirichlet, Neumann and Impedance Boundary Conditions. *Acta Appl. Math.* **110** (2010), 289–311.
24. \***A. Kharazishvili**, On almost measurable real-valued functions. *Studia Sci. Math. Hungar.* **47** (2010), No. 2, 257-266.
25. **A. Kharazishvili**, On nonmeasurable unions of measure zero sections of plane sets. *Proc. A. Razmadze Math. Inst.* **154** (2010), 137-143.
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i. **kiRuraZe**: konferencia *Пятые Богдановские чтения по обыкновенным дифференциальным уравнениям», Минск, Беларусь, 7-10 Декабря, 2010* moxseneba Об ограниченных и исчезающих в бесконечности решениях нелинейных неавтономных дифференциальных систем.

o. **Wkadua**: konferencia Eleventh International Conference on Integral Methods in Science and Engineering, University of Brighton, UK, 12-14 July, 2010. moxseneba **O.Chkadua**, D.Natroshvili, S.Mikhailov, *Localized segregated boundary-domain integral equations formulation for transmission problems*,

o. **Wkadua**: konferencia Eleventh International Conference on Integral Methods in Science and Engineering, University of Brighton, UK, 12-14 July, 2010. moxseneba **O.Chkadua**, D.Natroshvili, S.Mikhailov, *Localized segregated boundary-domain integral equations for mixed type boundary value problems*,

o. **Wkadua**: konferenci a Eleventh International Conference on Integral Methods in Science and Engineering, University of Brighton, UK, 12-14 July, 2010. მოხსენება **O.Chkadua**, D.Natroshvili, S.Mikhailov, *Analysis of segregated boundary-domain integral equations for variable coefficient BVPs in exterior domains*,

o. **Wkadua**: konferenci a , I International Conference of the Georgian Mathematical Union, Batumi, September 12-19, 2010. მოხსენება **O.Chkadua**, S.Mikhailov, D.Natroshvili, *Localized boundary-domain integral equation approach for second order partial differential equations with variable coefficients*

**R. Duduchava**, *Korn's inequalities for shells* (plenary lecture), I International Conference of the Georgian Mathematical Union, Batumi, September 12-19, 2010.

r. **duduCava**: konferenci a Operator Theory and Applications-IWOTA 2010, July 12-16, Berlin, Germany, მოხსენება **R. Duduchava**, *Continuation of functions from hypersurfaces*, (Invited talk).

r. **duduCava**: konferenci a International Congress of Mathematicians, August 19-27, Hyderabad, India, მოხსენება **R. Duduchava**, **O.Chkadua**, **D. Kapanadze**, *Equivalent regularization of Maxwell's equations*.

n. **Savi ayaZe**: konferenci a "უწყვეტ ტანთა მექანიკის აქტუალური პრობლემები - სიმქეტი", 4-8 ოქტომბერი, 2010,

T. **kandel aki**, n. **inasariZe**, e. **xmal aZe**, g. **donaZe**: konferenci a K-Theory, C\*-algebras and Index Theory, goetingeni s universiteti (germani a) 1 – 5 ნოემბერი 2010, მოხსენებები: e. **xmal aZe** On non-abelian Leibniz cohomology, n. **inasariZe** Cyclic Homologies of Crossed Modules of Algebras.

i. **sanebl iZe**: konferenci a Georgia Topology conference, Jorgiis universiteti (USA), May 19--23, 2010.

i. **sanebl iZe**: konferenci a Operad workshop, Lille University, Lille, France, August 23-28 2010. მოხსენება On the quasi  $L_{\infty}$ -bialgebra structure on the homotopy groups.

g. **xi mSi aSvil i**: International Congress of Mathematicians (ICM-2011), Hyderabad, India, 19-27.08.2010.

g. **xi mSi aSvil i**: konferenci a Alekseewski Tag, Hausdorff Mathematical Center, Bonn, 15.10.2010.

m. **bakuraZe**: konferenci a International conference **Conference K-Theory, C\*-Algebras and Index Theory, Nov. 1-5, 2010**. მოხსენება *Morava K-theory rings for finite groups*.

**T. ServaSiZe:** konferenci a "The Third International Conference" Problems of Cybernetics and Informatics" September 6-8, 2010, Baku, Azerbaijan, moxseneba On two simple stochastic models.

**o. furTuxia:** konferenci a "The Third International Conference" Problems of Cybernetics and Informatics" September 6-8, 2010, Baku, Azerbaijan, moxseneba Stochastic derivative operator of two-dimensional Poisson functionals.

**o. furTuxia:** konferenci a International Conference Modern Stochastics: Theory and Applications, Kyiv, September 7-11, moxseneba Anticipative Stochastic Calculus for the Poisson processes.

**a. kviniXiZe:** konferenci a American Institute of Physics Conference 2010, moxseneba Crossing symmetric potential model of pion-nucleon scattering.

**a. kviniXiZe:** konferenci a Workshop in Honour of Tony Thomas' 60th Birthday, Adelaide, Australia, 15-19 Feb 2010, moxseneba Achievements and New Directions in Subatomic Physics.

**gj orj aZe:** konferenci a 40th International Symposium Ahrenshoop agvisto. 23-27, 2010, berl in-Smokvici, germania, moxseneba Recent Developments in String/M Theory.

## saqarTvel oSi gamarTul i konferenciebi

47 moxseneba

**moxsenebebi akademikos niko musxel iSvil is 120 wl isTavisadmi miZRvni i andria razmaZis maTematikis institutis samecni ero konferenci aze, 29 noemberi – 3 dekemberi, 2010 w.**

r. bancuri	akad. niko musxel iSvil is cxovreba da Semoqmedeba
T. qadeiSvil i	mgrexo koj aWvebi hGa-al gebrebSi
s. sanebl iZe	$LC_{\infty}$ -al gebris struqtura homotopiis j gufebze
g. xi mSi aSvil i	eqstremal uri amocanebi konfiguraciul sivrceebze
T. kandel aki	triangul irebul i kategoriebisa da equivariantul i KKKK-Teoriis l okal izacia da kol okal izacia
n. inasariZe	al gebrebis j varedini modul ebis cikl uri homol ogiebi
e. xmal aZe	araabel uri l aibnicis homol ogiebis Sesaxeb
b. maRraZe	Testing the Concept of Quark-Hadron Duality with the ALEPH Decay Data
g. j orj aZe	sivrcismagvari minimal uri zedapirebi Ads x S sivrceebSi

g. j orj aZe	nawil akis dinamikis koordinatul i warmodgena statikur sivrce-droSi
a. kvinixiZe	rel ativisturi qvanturi meqanika
v. kokil aSvil i	singul arul i integral ebi banaxis arastandardtul sivrceebSi
v. kokil aSvil i v. paataSvil i	dirixl es amocana cvl admaCvenebl ian smirnovis kl asis harmoniul i funqciebisaTvis
l . efremiZe	pol inomial uri matric funqciebis speqtral uri faqtorizaciis Sesaxeb
g. berikel aSvil i, m. mirianaSvil i	სხვაობიანი სქემები ბენჟამინ-ბონა-მაჰონის განტოლებისათვის კოშის მახასიათებელი ამოცანის გლობალური ამოხსნადობის შესახებ მეორე რიგის არაწრფივ ჰიპერბოლურ სისტემათა ერთი კლასისათვის
s. xaribegaSvil i	furies ormagi triginometriul i mwkrivis integrebis Sesaxeb
o. ZagniZe	bernsteinis pol inomebis zeda sazRvrebis Sesaxeb. areze da mis sazRvarze gansazRvrul i
T ServaSiZe	l okal izebul i integral ur gantol ebaTa meTodi
o. Wkadua	meore rigis cvl adkoefficientebiani kerZowarmoebul iani diferencial uri gantol ebebisaTvis
o. j oxaZe	koSis amocana damxSobi arawrfivi wevris Semcvel i tal Ris gantol ebisaTvis
S. tetunaSvil i	furies mwkrivebis ganSl adoba Sej amebadobis zogierTi meTodiT
r. gaCeCil aZe, a. gaCeCil aZe	dinamikis sasazRvro sakontaqto amocanebi hemiotropul i drekadi sxელ ebisTvis xaxunis gaTval iswinebiT
a. xaraziSvil i	diskretul i geometriul i struqturebi da maTTan asocierebul i al goritmebi
i. kiRuraZe	aral okal uri amocanebi maRal i rigis singul arul i Cveul ebrivi diferencial uri gantol ebebisaTvis
n. farcvania	orwertil ovani sasazRvro amocanebi organzomil ebiani singul arul koefficientebiani wrfivi sistemebisaTvis
j . gvazava	saSual o mniSvnel obis Toremebi arawrfivi hiperbol uri gantol ebebisaTvis
d. gabel aia, l . bekl emiSevi	j afariZis pol imodal uri damtkicebadobis l ogikis topol ogiuri semantika
m. j ibl aZe	hopfis al gebrebis PROP-is aRwera
m. mania, r. TevzaZe	სარგებლიანობის მაქსიმიზაციის ამოცანა და დაკავშირებული შექცეულისტოქასტური დიფერენციალური განტოლებები

d. Kapanadze

ტალღის დიფრაქციის ამოცანების შესახებ დირხლე,  
ნეიმანისა და იმპედანსის სასაზღვრო პირობებით

**moxsenebebi saqarTvel os maTematikosTa kavSiris I serTaSoriso  
konferenciaze, baTumi, 12-19 seqtemberi, 2010 w.**

T. Buchukuri, O. Chkadua, R. Duduchava, D. Natroshvili, Stress Field Singularities in Piezoelectric media.

L. Castro, R. Duduchava, D. Kapanadze. Electromagnetic scattering by orthotropic waveguide.

O. Chkadua, S. Mikhailov, D. Natroshvili, Localized boundary-domain integral equation approach for second order partial differential equations with variable .

R. Duduchava, Korn's inequalities for shells (plenary lecture).

A. Gachechiladze, R. Gachechiladze, D. Natroshvili, Boundary Contact Problems with Friction of Dynamics for Hemitropic Elastic Solids.

T. qadeiSvil i,  $A_\infty$ -al gebris struqtura kohomol ogiebSi da misi gamoyenebani homotopiis TeoriaSi.

**moxsenebebi Tsu gamoyenebiTi maTematikis intitutis seminaris XXIV  
gafarToebul i seminaris sxdomebze, 22-24 april i, 2010 w.**

z. cigroSvil i, mraVal ganzomil ebian diskretul ganawil ebaTa erTi oj axis Sesaxeb, gamoyenebebi T sakredito portfel ebis "defol tebis" model ireba.

T. muml aZe, z. qvaTaZe, T. **ServaSiZe**, SemTxveviTi sidi dis ganawil ebis kvantilis erTi Tvisebis Sesaxeb

i. gasviani, T. **ServaSiZe**, diskontirebuli j amebi cval ebadi faqtori T.

**moxsenebebi akad. Nn. musxel iSvil is dabadebi dan 120 wl isTavisadmi  
miZRvnil saqarTvel os meqanikosTa pirvel yovel wl iur  
konferenciaze, 20-22 dekemberi, 2010 w.**

r. **bancuri**; Akad. Nn. musxel iSvil is samecniero memkvidreoba. 3. n. Savl ayaZe. Ddrekadobis Teoriis sakontaqto amocanebis Sesaxeb..

l . **Safaqi Ze**, periodul i, kvaziperiodul i da qaosuri rejimebis bifurkaciebi araizoTermul kuetas dinebaSi radianul i dinebiTa da radianul i temperaturul i gradientiT.

n. **Savi ayaZe**,Ddrekadobis Teoriis sakontaqto amocanebis Sesaxeb

### sxva konferenci ebi

j . gvazava: konferencia *The International Conference "Information and Computer Technologies"*, Tbilisi, May 2-6, 2010. moxseneba On nonlinear versions of characteristic problems for non-strictly hyperbolic equations.

j . gvazava: konferencia *The international Scientific Conference "Information and Computer Technologies, Modelin Control"*, Tbilisi, November 1-4, 2010. moxseneba On simulation of beginnings of impenetrability domains for nonlinear waves.

m. aSordia: soxumis universitetis konferencia, 29 april i – 4 mai si 2010, Tbil isi, moxseneba "singul arul impul sur gantol ebaTa sistemebisaTvis wrfivi sasazRvro amocanebis Sesaxeb".

n. Savi ayaZe: saerTaSoriso samecniro-teqnikuri konferencia `samSenebl o meqanikis probl emebi-. Tbil isi, 15-17 ivni si, 2010.

a. mesxi: konferencia Young Researchers First International Camp, Bakuriani, Georgia, 25-31 July, 2010. moxseneba On the Hardy Inequality.

**institutis TanamSromel Ta mivl inebebi sazRvargareTis  
samecniero centrebSi**

**51 samecniero mivl ineba sazRvargareT**

**g. I avrel aSvil** i mivl inebul i iyo q. gol mis maqs pl ankis institut-Si (germania) erTobl ivi kvl eviTis samuSaoebis Casatarebl ad a.w. 4 ianvridan 31 martamde.

**g. j orj aZes** mivl inebul i iyo humbol tis universitetSi (germania) erTobl ivi samecniero kvl evebis Casatarebl ad a.w. 1-dan 14 ianvramde.

**d. zanguraSvil** i mivl inebul i iyo konsul tantad q. pl imutSi (Thothic Technology Partners, aSS) a.w. 15 ianvaridan 1 ivl isamde.

**n. beJaniSvil** i mivl inebul i iyo q. I ondonis imperiul kol ej Si (ingl isi) proeqtze “Order-Topological and Model-Theoretic Methods in Modal Logic” samuSaod a.w. 20 ianvridan 20 april amde.

**v. I omaZe** mivl inebul i iyo I ahores universitetSi (pakistani) l eqciebis kursis wasakiTxad a.w. 2 Tebervl idan 20 maisamde.

**a. mesxi** mivl inebul i iyo I ahores abdu sal amis maTematikur mecnierebaTa skol aSi (Ppakistani) samTavrobo kol ej -universitetSi doqtorantebTan muSaobis gasagrZel ebl ad da saerTaSoriso konferenciaSi “MIA 2010” monawil eobis misaRebad a.w. 2 Tebervl idan 17 martamde.

**m. el iaSvil** i mivl inebul i iyo q. dubnis (ruseTi) gaerTianebul i birTvul i kvl evebis institutSi samecniero sabWos muSaobaSi monawil eobis misaRebad a.w. 17-21 Teberval s.

**n. inasariZe** mivl inebul i iyo santiago de kompostel as universitetSi (espaneTi) erTobl ivi samecniero kvl evebis Casatarebl ad a.w. 17 martidan 8 april amde.

**e. xmal aZe** mivl inebul i iyo santiago de kompostel as universitetSi (espaneTi) samecniero kvl evebis Casatarebl ad a.w. 17 martidan 17 maisamde.

**g. j orj aZe** mivl inebul i iyo humbol tis universitetSi (berlini, germania) erTobl ivi kvl eviTis samuSaoebis Casatarebl ad, roml ebic gaTval iswinebul ia VW grantis fargl ebSDi a.w. 24 martidan 24 oqtombramde.

**v. garsevaniSvil** i mivl inebul i iyo q. JenevaSi (Sveicaria) evropis birTvul i kvl evebis centrSi samecniero kvl evebis Casatarebl ad a.w. 19 april idan 19 maisamde.

**s. sanebl iZe** mivl inebul i iyo j orjiis universitetSi (q. aTeni, aSS) a.w. 17-24 maiss saerTaSoriso konferenciaSi monawil eobis misaRebad.

**o. Wkadia** mi vl inebul i iyo brunel is universitetSi (didi britaneTi) samecniero kv l evebis Casatarebl ad a.w. 3 april idan 2 agvistomde.

**m. el iaSvil** i mi vl inebul i iyo q. romSi (ital ia) “etore maioranas” centris miwveviT a.w. 27-30 april s.

**n. beJaniSvil** i mi vl inebul i iyo did britaneTSi (Imperial College London, London, UK) proeqtze “Order-topological and model theoretic methods in modal logic” samuSaod a.w. 26 april idan 7 ivni samde.

**a. xvedel iZe** mi vl inebul i iyo q. dubnis (ruseTi) birTvul i kv l evis gaerTianebul institutSi erTobl ivi samecniero kv l evebis Casatarebl ad a.w. 5 maisidan 11 agvistomde.

**a. kviniXiZe** mi vl inebul i iyo dubnis birTvul i kv l evebis gaerTianebul i institutis Teoriul i fizikis l aboratoriaSi (ruseTi) erTobl ivi samecniero kv l evebis CatarebasTan dakavSirebiT a.w. 6 maisidan 18 maisamde.

**a. mesxi** mi vl inebul i iyo paduas universitetSi (ital ia) a.w. 17 maisidan 16 ivni samde samecniero saqmianobisaTvis da q. garganoSi saerTaSoriso konferenciis muSaobaSi monawil eobis misaRebad (7-11 ivnisi).

**T. qadeiSvil** i mi vl inebul i iyo triestes Teoriul i fizikis centrSi (ital ia) samecniero muSaobisaTvis a.w. 1 ivnisidan 31 ivl isamde.

**g. l avrel aSvil** i mi vl inebul i iyo gol mis maqs pl ankis institutSi (germania) erTobl ivi samuSaoebis Casatarebl ad a.w. 2 ivnisidan 10 ivni samde.

**m. mania** mi vl inebul i iyo berlinis humbol tis universitetis seminarSi monawil eobis misaRebad (germania) a.w. 15 ivnisidan 19 ivni samde.

**n. farcvania** 22 ivnisidan 26 ivni samde mi vl inebul i iyo sl ovakeTSi (raJেকে তেপ্লিচে), sadac monawil eoba miRo Jilinas universitetis mier organizebul i saerTaSoriso konferenciis `diferencial uri da sxvaobiani gantol ebebi da gamoyenebebi \_ CDDEA 2010- muSaobaSi, rogorc saprogramo komitetis wevrma da mowveul ma momxsenebel ma.

**a. el aSvil** i mi vl inebul i iyo bil efel disa da boxumis universitetebSi (germania) da l eviko termeSi (ital ia) erTobl ivi kv l evebis Casatarebl ad da samecniero konferenciaSi monawil eobis misaRebad a.w. 14 ivnisidan 6 seqtembramde.

**v. kokil aSvil** i mi vl inebul i iyo a.w. 20 ivnisidan 2 ivl isamde portugal iis samecniero centris sazafxul o skol aSi l eqciebis wasakiTxad (21-25 ivnisi) da al garves universitetSi (q. faro) erTobl ivi kv l evebis Casatarebl ad.

**n. beJaniSvil** i mi vl inebul i iyo l ondonis imperial kol ej Si (didi britaneTi) grantze samuSaod a.w. 28 ivnisidan 15 agvistomde.



r. **duduCava** mi vl inebul i iyo kiSini ovis universitetSi (mol daveTi) moxsenebebis wasakiTxad a.w. 2 ivl isidan 11 iv+l isamde da a.w. 12 ivl isidan 19 ivl isamde q. berl inSi (germania) saerTaSoriso konferenci aze IWOTA 2010 monawil eobisaTvis.

s. **muxigul aSvil i** mi vl inebul i iyo CexeTis mecnierebaTa akademi is maTematikis institutis brnos filial Si samecniero TanamSroml obisaTvis a.w. 9 ivl isidan 2011 wl is 28 Tebev l amde.

T. **daTuaSvil i** mi vl inebul i iyo santiago de kompostel as da bigos universitetebSi (espaneTi) erTobl ivi kv l evebis Casatarebl ad a.w. 24 agvistodan 22 noembr amde.

r. **duduCava** a.w. 16-dan 29 agvistomde mi vl inebul i iyo q. bangal orSi (indoeTi) saerTaSoriso maTematikosTa kavSiris general uri asambl eaze da q. heidarabadSi ms ofl ios maTematikosTa kongresze. r. duduCava arCeul ia saqarTvel os del egatad general ur asambl eaze, xol o kongresze miwveul ia moxsenebi T.

m. **el iaSvil i** mi vl inebul i iyo q. eriCeSi (ital ia) mecniereTa ms ofl io federaci is sesi is muSaobaSi monawil eobis misaRebad a.w. 19-dan 26 agvistomde.

s. **sanebl iZe** mi vl inebul i iyo q. l il is universitetSi (safrangeTi) saerTaSoriso topol ogiuri konferenci is muSaobaSi monawil eobis misaRebad a.w. 23-dan 28 agvistomde.

v. **kokil aSvil i** mi vl inebul i iyo CexeTSi a.w. 11-dan 17 seqtembr amde saerTaSoriso skol a konferenci aSi monawil eobis misaRebad (rogorc erT-erTi miwveul i momxsenebel i).

T. **ServaSiZe** mi vl inebul i iyo q. baqoSi (azerbaij ani) saerTaSoriso konferenci is muSaobaSi monawil eobis misaRebad a.w. 5-dan 9 seqtembr amde.

g. **donaZe** mi vl inebul i iyo santiago de kompostel as universitetSi (espaneTi) samecniero sakiTxebTan dakavSirebi T a.w. 8 seqtembridan 25 noembr amde.

i. **kiRuraZe** mi vl inebul i iyo fl oridis teqno l ogiuri institutis maTematikur mecnierebaTa departamentSi (mel burni, fl orida, aSS) erTobl ivi samecniero kv l evebis Casatarebl ad a.w. 4 oqtombridan 20 noembr amde.

n. **inasariZe** mi vl inebul i iyo santiago de kompostel as universitetSi (espaneTi) erTobl ivi samecniero kv l evebis Casatarebl ad a.w. 21 seqtembridan 17 noembr amde.

e. **xmal aZe** mi vl inebul i iyo santiago de kompostel as universitetSi (espaneTi) erTobl ivi samecniero kv l evebis Casatarebl ad a.w. 21 seqtembridan 27 noembr amde.

r. **bancuri** mi vl inebul i iyo q. erevanSi da q. dil iJanSi (somxeTi) saerTaSoriso konferenci is muSaobaSi monawil eobis misaRebad, rogorc saorganizacio komitetis wevri da momxsenebel i a.w. 4-dan 9 oqtombr amde.

**n. Savl ayaZe** miVl inebul i iyo q. erevanSi da q. dil iJanSi (somxeTi) saerTaSoriso konferenciis muSaobaSi monawil eobis misaRebad, rogorc momxsenebel i a.w. 4-dan 9 oqtombramde.

**b. mesabl iSvil i** miVl inebul i iyo q. diusel dorfis universitetSi (germania) samecniero TanamSroml obisaTvis a.w. 29 seqtembridan 27 dekembramde.

**m. el iaSvil i** miVl inebul i iyo q. dubnaSi (ruseTi) birTvul i kvl evebis gaerTianebul institutSi saerTaSoriso samecniero sabWos sesiaSi muSaobis misaRebad da erTobl ivi kvl evebis koordinaciis mizniT a.w. 19-dan 26 seqtembramde.

**a. mesxi** miVl inebul i iyo paduas universitetSi (ital ia) l eqciebis wasakiTxad da samecniero saqmianobis gasagrZel ebl ad a.w. 30 seqtembridan 30 dekembramde.

**v. l omaZe** miVl inebul i iyo l ahores universitetSi (pakistani) l eqciebis kursis wasakiTxad a.w. 4 oqtombridan 23 dekembramde.

**a. xvedel iZe** miVl inebul i iyo q. dubnis (ruseTi) birTvul i kvl evis gaerTianebul institutSi a.w. 12 oqtombridan 30 dekembramde.

**n. beJaniSvil i** miVl inebul i iyo l ondonis imperial kol ej Si (didi britaneTi) grantze samuSaod a.w. 12 oqtombridan 20 dekembramde.

**a. el aSvil i** miVl inebul i iyo q. boxumis universitetSi (germania) erTobl ivi samecniero kvl evebis Casatarebl ad a.w. 14 oqtombridan 15 dekembramde.

**g. j orj aZe** miVl inebul i iyo q. berl inis humbol tis universitetSi (germania) erTobl ivi kvl eviTi samuSaoebis Casatarebl ad a.w. 19 oqtombridan 20 noembramde.

**m. bakuraZe** miVl inebul i iyo giotingenis universitetSi (germania) erTobl ivi samecniero kvl evebis Casatarebl ad a.w. 26 oqtombridan 16 noembramde.

**g. ximSiaSvil i** miVl inebul i iyo q. bonsa (MPIM) da obervol faxis (MFO) maTematikur institutSi (germania) saerTo kvl evebis Casatarebl ad a.w. 31 oqtombridan 20 noembramde.

**T. kandel aki** miVl inebul i iyo q. giotingenSi (germania) konferenciis muSaobaSi monawil eobis misaRebad a.w. 1 noembridan 12 noembramde.

**d. zanguraSvil i** miVl inebul i iyoKkonsul tantad q. pl imutSi (Thothic Technology Partners, aSS) a.w. 16 noembridan 2011 wl is 1 ianvramde.