DENOMINATOR RESPECTING MAPS

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This abstract is based on joint work with V. Marra (University of Milan).

The category of semisimple MV-algebras is dual to a category whose objects are arbitrary compact Hausdorff spaces embedded in some Tychonoff cube, and arrows are $\mathbb{Z}$-maps, i.e., piecewise affine linear maps with integer coefficients. It is worthwhile noticing that the above duality generalizes both Stone's and Gelfand's dualities, for Boolean algebras and commutative C*-algebras with unit are (equivalent to) full subcategories of semisimple MV-algebras.

It is evident that the embedding of the topological space in a Tychonoff cube is essential to properly characterize the dual category, similarly to the case of Priestley's duality in which a partial order must be attached to the Stone space to succinctly characterize the dual maps.

Let I be any set, one can define a *denominator* function on the Tychonoff cube $[0,1]^I$, by sending each point in $[0,1]^I \setminus \mathbb{Q}^I$ to 0 and otherwise to the least common multiple of the denominators of the coordinates written in reduced form (the `lcm` being 0, in case the set of denominators is unbounded). A pivotal aspect of $\mathbb{Z}$-maps is that they *respect denominators*, namely a point with denominator n can be sent by a $\mathbb{Z}$-map only to points whose denominator is a divisor of n. It is natural to ask whether the aforementioned embedding can be made more intrinsic by specifying natural number labels on the points of an abstract compact Hausdorff space. The proposed talk aims at discussing separation properties that make such an embedding possible.

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