

Iterated Cantor-Bendixson derivative operators: completeness and definability of a modal logic

Phillipe Balbiani

Any strict preorder R on a nonempty set X defines a function Θ_R which associates to each strict preorder $S \subseteq R$ on X the strict preorder $\Theta_R(S) = R \circ S$ on X . Owing to the strong relationships between Alexandroff T_D derivative operators and strict preorders, this paper firstly calls forth the links between the Cantor-Bendixson ranks of Alexandroff T_D topological spaces and the greatest fixpoints of the Θ -like functions defined by strict preorders. It secondly considers a modal logic with modal operators \Box and \Box^* respectively interpreted by strict preorders and the greatest fixpoints of the Θ -like functions they define. It thirdly addresses the question of the complete axiomatization of this modal logic.