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Modal Logic over Ordinals

Modal Logic ML is a fragment of First-order logic known for its good model-theoretic and algorithmic properties. We will consider ML interpreted in ordinal models. These are structures with some unary predicates and a single binary relation which is a descending, well-founded, strict linear order > on the universe. Since every such order is isomorphic to an ordinal number, we call these models ordinal models. I will show that, assuming finiteness of the vocabulary, ML over ordinal models is compact. That is, if t is a set of ML formulae over finitely many symbols and every finite fragment of t has an ordinal model then so does the entire t. Both the result and the proof (using Higman's Lemma as its technical heart) are arguably surprising. If time permits, I will discuss how to use the facts established in the proof to easily reprove and strengthen the known soundness and (weak) completeness of modal axiomatization K4.3W with respect to the class of all ordinal models.

No knowledge of modal logic will be assumed.

Ort: Mathematik Ost, Seminarraum 01.003	Zeit: Montag, 06.05.2024 16:15

Zu diesem Vortrag laden wir Sie herzlich ein.

gez. Anton Freund