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Zolin, Evgeni E. (RS-MOSCM-ML)
Embeddings of propositional monomodal logics. (English summary)
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Summary: "The aim of this paper is to investigate the expressibility of classical propositional monomodal logics. To this end, a notion of embedding of one logic into another is introduced, which is a translation that preserves theoremhood. Each translation $\operatorname{tr}_{F}$ is induced by a formula $F(p)$ of one variable $p$; it respects Boolean connectives and translates a formula of a form $\square A$ into $F\left(\operatorname{tr}_{F}(A)\right)$. This notion enables one to measure the expressibility of a logic by the (finite or infinite) number of logics embeddable into it. This measure is calculated here for a large family of modal logics including K, K4, KB, K5, GL, GL.3, T, S4, B, S5, Grz, Grz.3, and provability logics. It is also shown that some of these logics (e.g., all normal logics containing the symmetry axiom except for the logics Triv, Ver, and the intersection of these two) are not embeddable into some others (e.g., K, K4, K5, GL, GL.3, T, S4, Grz, Grz.3, and most provability logics)."
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