Provability Algebras and Kripke Models

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Provability algebras are Lindenbaum boolean algebras of formal arithmetical theories enriched by one or several modal operators corresponding to reflection principles (or, dually, to provability assertions). We will survey some results on the analysis of formal theories based on provability algebras and mention some open questions in this area. In the second part of the talk we will present some recent results on generalized Kripke semantics for the corresponding modal logics.