

On Boolean closed full trios and rational Kripke frames

Georg Zetsche, TU Kaiserslautern

Thursday 14. November 2013, 11:00 Uhr,

A Boolean closed full trio is a class of languages that is closed under Boolean operations (union, intersection, and complement) and rational transductions. It is well-known that the regular languages constitute such a Boolean closed full trio. It is shown here that every such language class that contains any non-regular language already includes the whole arithmetical hierarchy (and even the one relative to this language). Our construction also shows that there is a fixed rational Kripke frame such that assigning an arbitrary non-regular language to some variable allows the interpretation of any language from the arithmetical hierarchy in the corresponding Kripke structure. Another consequence of our result is that no full trio generated by one language is closed under complementation, unless it coincides with the regular languages.