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On the theory of radical theories

This talk is based on a joint work with L. Márki, the aim of which is to bring several developments in defining and studying properties of radicals, in various general axiomatic contexts, under a single theory. We begin by introducing a notion of a “radical theory”, as a faithful amnestic functor equipped with a suitable class of right inverses of the object map of the functor – these are the radicals in the radical theory. Different notions of radicals studied in the literature can all be seen as particular instances of this general notion. An attempt to extend such studies to the new context allows us to understand better similarities and differences between various approaches. The problem that led to this work was to present the “general Kurosh-Amitsur radical theory” as developed by L. Márki, R. Mlitz, R. Wiegandt, in a simpler framework than the one used originally in 1988. We try to achieve this by showing a link with the work of G. Janelidze and L. Márki from 2003, which describes Kurosh-Amitsur radicals in very simple terms, but is only applicable to a “symmetric” instance of the general Kurosh-Amitsur radical theory.