▶ PAOLO BALDI, PETR CINTULA, AND CARLES NOGUERA, *On classical and fuzzy two-layered modal logics for uncertainty: translations and proof-theory.*
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Formal systems for modeling uncertainty are often presented as modal logics with a two-layered syntax, which does not allow for arbitrary nesting of modality. The lower layer is typically used for representing events, and the upper one for reasoning about the measure of uncertainty at hand (probabilities, belief function etc.).

We are interested in two families of such logics: those employing classical logic on both layers, and those employing a suitable fuzzy logic in the upper layer. In [1] we have provided translations between logics of these two families: in particular, we have shown how a proof system for Łukasiewicz logic, based on hypersequents [4] can be used to provide an explicit faithful translation of a classical two-layered logic for probability, introduced in [2] into a corresponding fuzzy one, introduced in [3]. We will present this result and its implications for a systematic investigation of two-layered modal logics from a proof-theoretic perspective, which is still lacking in the literature.

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[4] G. Metcalfe, N. Olivetti, D. M. Gabbay, Proof Theory for Fuzzy Logics, Springer, 2008.