

- ▶ DAVID M. CERNA, *Proof Schemata: A Formalism for Proof Transformation in the Presence of Induction*.

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Proof schemata are a relatively recent sequent formalism which represents inductive arguments as infinite sequences of finite proofs. While this is similar to Omega rule type sequent formalisms, proof schemata require an explicit primitive recursive construction of the proof sequence. In contrast to cyclic proof formalisms, proof schemata do not prove statements by infinite descent, rather given a tuple of elements from the indexing sort, a proof schema can be normalized to a first order sequent proof. Essentially, proof schemata fall in between these two well known formalisms. However, while these alternative formalisms both admit cut-elimination and the subformula property, as do proof schemata, they do not extend essential consequences such as Herbrands theorem. Neither system was designed to track particular instances of formula occurrences. On the other hand, proof schemata excel at occurrence tracking on the benefit of their primitive recursive construction. Though this type of proof construction incur certain difficulties which are not shared with the other formalisms for induction. In this talk we discuss, the state of the art, current investigations, and open problems.