

Seminar 2021/2022

Polarized natural deduction

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<https://videoconf-colibri.zoom.us/j/86389857315>

A natural deduction system [1] is presented for polarized, intuitionistic, propositional logic with several interesting properties [2]: it has a privileged relationship with a standard focused sequent calculus [3]; it enjoys the subformula property; polarity decides whether the elimination rules are generalized or not [4]; there are no commutative conversions; and even atomic formulas have introduction, elimination and normalization rules. In the corresponding polarized lambda-calculus, reduction follows a paradigm that subsumes both call-by-name and call-by-value [5].

References

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- [2] José Espírito Santo. The polarized λ -calculus. *Electronic Notes in Theoretical Computer Science* 332: 149–168, 2017.
- [3] Chuck Liang and Dale Miller. Focusing and polarization in linear, intuitionistic, and classical logics. *Theoretical Computer Science*, 410(46):4747–4768, 2009.
- [4] Jan von Plato. Natural deduction with general elimination rules. *Archive for Mathematical Logic*, 40(7):541–567, 2001.
- [5] Paul B. Levy. Call-by-push-value: Decomposing call-by-value and call-by-name. *Higher Order and Symbolic Computation*, 19(4): 377–414, 2006.