

- MATTIAS GRANBERG OLSSON AND GRAHAM LEIGH, *Partial conservativity of  $\widehat{\text{ID}}_1^i$  over Heyting arithmetic via realizability.*

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The result that intuitionistic  $\widehat{\text{ID}}_1$  ( $\widehat{\text{ID}}_1^i$ ) is conservative over Heyting arithmetic seems to have been proved only quite recently in a series of papers by Buchholz, Arai, and Rüede and Strahm [3, 1, 4, 2]. We present work in progress on a proposal for a hopefully novel proof of this result, or a substantial part of it, based on realizability and ideas from formal truth. The idea is to use Gödel's diagonal lemma to show that every axiom of some suitable subtheory of  $\widehat{\text{ID}}_1^i$  (e.g. of fix-points only for strongly positive operators) is realizable, that realizability respects intuitionistic derivability and that realizability is disquotational for certain classes of formulae (e.g. almost negative formulae).

[1] TOSHIYASU ARAI, *Some Results on Cut-elimination, Provable Well-orderings, Induction and Reflection*, *Annals of Pure and Applied Logic*, vol. 95 (1998), no. 1–3, pp. 93–184.

[2] ——— *Quick Cut-elimination for Strictly Positive Cuts*, *Annals of Pure and Applied Logic*, vol. 162 (2011), no. 10, pp. 807–815.

[3] WILFRIED BUCHHOLZ, *An Intuitionistic Fixed Point Theory*, *Archive for Mathematical Logic*, vol. 37 (1997), no. 1, pp. 21–27.

[4] CHRISTIAN RÜEDE AND THOMAS STRAHM, *Intuitionistic Fixed Point Theories for Strictly Positive Operators*, *Mathematical Logic Quarterly*, vol. 48 (2002), no. 2, pp. 195–202.