ПЛЕНАРНЫЕ ДОКЛАДЫ

K. Ambos-Spies

Heidelberg University, ambos@math.uni-heidelberg.de

ON THE THEORIES OF THE STRONGLY BOUNDED TURING DEGREES OF COMPUTABLY ENUMERABLE SETS

Recently two variants of strongly bounded Turing reductions have been introduced. An *identity bounded Turing* reduction (*ibT*-reduction for short) is a Turing reduction where no oracle query is greater than the input while a *computable Lipschitz* reduction (*cl*-reduction for short) is a Turing reduction where the oracle queries on input x are bounded by $x + c$ for some constant c.

In our talk we discuss some recent results on the first order theories of the partial orderings of the strongly bounded Turing degrees of the computably enumerable sets. In particular, we show that, for $r = ibT, cl$, the theory $\mathrm{Th}(\mathbf{R}_r, \leqslant)$ of the partial ordering of the c.e. r-degrees realizes infinitely many 1-types and is undecidable. Moreover, by investigating cupping properties, we show that the theories of the partial orderings $(\mathbf{R}_{ibT}, \leqslant)$ and $(\mathbf{R}_{cl}, \leqslant)$ are not elementarily equivalent (the latter is joint work with Bodewig, Fan and Kraling).

S. B. Cooper

University of Leeds, pmt6sbc@maths.leeds.ac.uk

CAUSALITY, COMPUTABILITY AND DEFINABILITY

Turing formalised the intuitive notion of computable causality via the notion of the oracle Turing machine. The model is