Analysing Turing degree over intuititionistic logic

Takako Nemoto

Graduate School of Information Sciences, Tohoku University

It is known that a basic part of recursion theory (cf. [1]), such as recursion theory, smn-theorem, recursion theorem and normal form theorem can be formalized in **HA** [2, Ch.3.7]. But how advance we can develop recursion theory over intuitionistic logic?

In this talk, we analyze, over an intuitionistic system, what non-constructive principles and induction principles are enough to show some properties of the Turing degree, including the existence of simple sets, simple and low sets, two incomparable degrees, and so on.

References

[1] R. Soare, *Recursively Enumerable Sets and Degrees*, Springer-Verlag, 1987.

[2] A.Troelstra and D. van Dalen, *Constructivism in Mathematics Volumes I*, Studies in Logic and the Foundations of Mathematics, Elsevier, 1988.