KURT GÖDEL RESEARCH CENTER FOR MATHEMATICAL LOGIC

UNIVERSITÄT WIEN

1090 WIEN, WÄHRINGER STRASSE 25

O.UNIV.-PROF. DR. SY-DAVID FRIEDMAN

INVITATION

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THE PROOF-THEORETIC STRENGTH OF RAMSEY'S THEOREM FOR PAIRS AND TWO COLORS

Abstract:

In the study of reverse mathematics, determining the first-order strength of Ramsey's theorem for pairs and two colors (RT^2_2) is a long-term open problem. Hirst showed that RT^2_2 implies Σ^0_2-bounding and Cholak/Jockusch/Slaman showed that RT^2_2 is Π^1_1-conservative over Σ^0_2-indction. Note that the proof-theoretic strength of Σ^0_2-bounding is the same as that of Σ^0_1-induction, so the proof-theoretic strength (or consistency strength) of RT^2_2 is in between Σ^0_1-induction and Σ^0_2-indction. Recently, the project of deciding the first-order strength of RT^2_2 has been strongly carried out using forcing constructions or priority arguments on nonstandard models of Σ^0_2-bounding mainly by Chong, Slaman and Yang, and they proved in particular that RT^2_2 does not imply Σ^0_2-indction. In this talk, we use a hybrid of forcing construction, indicator arguments, and proof-theoretic technique to show that the Π^0_3-part of RT^2_2 is exactly the same as Σ^0_1-induction, thus, the proof-theoretic strength of RT^2_2 is exactly the same as Σ^0_1-induction.

This is a joint work with Ludovic Patey.

THURSDAY, FEBRUARY 11, 2016
Tea at 3:30pm in the KGRC meeting room (room 104)
Talk at 4:00pm in the KGRC lecture room (room 101)
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