

Speaker: Steven VanDenDriessche
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Thursday, September 27, 2012
2:00 pm
125 Hayes-Healy Hall

Title: Maxima for the \leq_{tc} ordering with respect to \sim_α^c

Abstract:

The Turing computable embedding is an effective reduction of the isomorphism relation on a class of countable structures K to that on K' . When such an embedding exists, we write $K \leq_{tc} K'$, indicating that the isomorphism problem for K' is at least as difficult as that for K . The relation \leq_{tc} is a preordering on classes of countable structures, and it is known that there is a maximum degree in this order. Motivated by the importance of computable infinitary sentences in this work, we define the equivalence relation \sim_α^c on structures, where $\mathcal{A} \sim_\alpha^c \mathcal{B}$ if and only if \mathcal{A} and \mathcal{B} satisfy the same computable infinitary Σ_α^0 sentences. For any $\alpha < \omega_1^{ck}$, we give a subclass of the countable reduced abelian p -groups which is a maximum for the \leq_{tc} ordering with respect to \sim_α^c . Further, these embeddings are highly uniform, and we describe work toward constructing an operator witnessing that the abelian p -groups are a maximum for \leq_{tc} with respect to $\sim_{\omega_1^{ck}}^c$. Finally, we show that if ZFC has an ω -model, then it is consistent that the abelian p -groups are a maximum with respect to $\sim_{\omega_1^{ck}}^c$.