Logic Seminar

Connectedness in structures on the real numbers: o-minimality and undecidability

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Abstract: We consider structures on the set of real numbers having the property that connected components of definable sets are definable. All o-minimal structures on the real line (R,<) have the property, as do all expansions of the real field that define the set N of natural numbers. Our main analytic-geometric result is that any such expansion of (R,<,+) by boolean combinations of open sets (of any arities) is either o-minimal or undecidable. We also show that expansions of (R, <, N) by subsets of N^n (n allowed to vary) have the property if and only if all arithmetic sets are definable. (Joint with A. Dolich, A. Savatovsky and A. Thamrongthanyalak.)

Tuesday, November 19 at 3:30 PM in 427 SEO