

Logic Seminar

Extending the Zilber trichotomy to Imaginary Sorts

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Abstract: Many authors have asked whether the Zilber trichotomy holds for strongly minimal structures definable (resp. interpretable) in structures of a particular class, say \mathcal{C} (examples include \mathcal{C} = all algebraically closed fields, algebraically closed valued fields, and o-minimal structures). Typically the "interpretable" case is seen as harder than the "definable" case (often significantly so). On the other hand, recent work with Hasson and Ye suggests otherwise. In particular, the following all turn out to be formal implications:

1. For \mathcal{C} = algebraically closed fields of residue characteristic zero, the definable case implies the interpretable case.
2. For \mathcal{C} = real closed valued fields, the definable case implies the interpretable case.
3. The definable case for \mathcal{C} = o-minimal fields implies the interpretable case for \mathcal{C} = all o-minimal structures.

These results all use variants of the same method, which (by the standards of trichotomy proofs) is surprisingly short and accessible. In this talk, I will attempt to introduce this method by giving a complete proof of (3) (which is the easiest), and

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discussing how to adapt the method to (1) and (2).

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