Department of Mathematics
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LOGIC SEMINAR

Guest Speaker: Nick Ramsey
University of Notre Dame

Date: Tuesday, January 30, 2024
Time: 2:00 PM
Location: 125 Hayes-Healy Bldg
Zoom URL: NA

Lecture Title:

The model theory of orthogonal spaces and quadratic geometries

Abstract

Orthogonal spaces are vector spaces together with a quadratic form whose associated bilinear form is non-degenerate. Over fields of characteristic two, there are many quadratic forms associated to a given bilinear form and quadratic geometries are structures that encode a vector space over a field of characteristic 2 with a non-degenerate bilinear form together with a space of associated quadratic forms. These structures over finite fields of characteristic 2 form an important part of the basic geometries that appear in the Lie coordinatizable structures of Cherlin and Hrushovski. We (a) describe the respective model companions of the theory of orthogonal spaces and the theory of quadratic geometries and (b) classify the pseudo-finite completions of these theories. We also (c) give a neostability-theoretic classification of the model companions and these pseudo-finite completions. This is a small step towards understanding the analogue of the Cherlin-Hrushovski theory of Lie coordinatizable structures in a setting where the involved fields may be pseudo-finite. This is joint work with Charlotte Kestner.