

第34回早稲田大学 数学・応用数理談話会

日時：2026年6月11日(木)

16:30-17:30 講演 (質疑応答を含む)

16:00-16:30 tea time

場所：早稲田大学西早稲田キャンパス
63号館2階05会議室



アクセス：<https://www.waseda.jp/top/access/nishiwaseda-campus>

早稲田数学応数談話会 URL: <http://www.math.sci.waseda.ac.jp/math/>

Title: Donaldson-Thomas theory of the quantum Fermat quintic

Abstract: Calabi-Yau threefolds provide a natural setting for the enumerative geometry of curves. A naive dimension count suggests that the number of curves should be finite; however, the actual geometry is far more intricate and has been the subject of intensive study over the past thirty years. In this talk, we investigate non-commutative analogues of this setting. We consider non-commutative projective varieties and construct moduli spaces of stable modules over them. In the three-dimensional Calabi-Yau case, this gives rise to non-commutative analogues of Donaldson-Thomas “sheaf counting” invariants. The simplest example is the Fermat quintic in quantum projective space, where the coordinates commute up to carefully chosen fifth roots of unity. We explore the moduli theory of finite length modules. This mixes features of the Hilbert scheme of commutative threefolds, with the representation theory of quivers. This is joint work with Yu-Hsiang Liu, with contributions by Atsushi Kanazawa.

Professor Kai Behrend
(University of British Columbia)



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