Algebraic Geometry and Commutative Algebra Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematics

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Wednesday, April 29, 2015
3:00 PM
258 Hurley Hall

Title: Exterior powers of p-divisible groups

Abstract:

p-divisible groups are smooth formal group schemes which naturally arise as injective limits of p-power torsion in algebraic groups. A celebrated theorem of Serre and Tate states that the deformation theory of an abelian variety over perfect fields is equivalent to the deformation theory of its p-divisible group, and so there is a deep connection between modular forms, which live in the cohomology of moduli spaces of abelian varieties (Shimura varieties) and deformations of p-divisible groups (Lubin-Tate and Rapoport-Zink spaces). These deformation spaces appear naturally in the Langlands program.

In this talk I will talk about p-divisible groups and their deformation spaces. I will then discuss my recent proof of the existence of exterior powers of p-divisible groups and explain how their construction defines a natural map between certain deformation (Rapoport-Zink) spaces. This would imply the existence, e.g., of a determinant map between deformation spaces of p-divisible groups, with implications for recent work of Scholze and Weinstein.