The University of Chicago
ALGEBRAIC GEOMETRY SEMINAR

Tuesday, November 10th, 2015
5:30 – 7:00 pm, Eckhart 312

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Connections and curvature on $\operatorname{Spec}\mathbb{Z}$

An arithmetic analogue of differential geometry can be developed in which functions are replaced by integer numbers and partial derivatives are replaced by Fermat quotient operators. Chern and Levi-Civita connections are shown to exist in this context. The Christoffel symbols have, as analogues, "higher dimensional Legendre symbols." Curvatures of these connections can be introduced and computed via "analytic continuation between primes." As a result the spectrum of the integers appears, in this setting, as an "infinite dimensional manifold" that is "naturally curved."