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Title: Delta Geometry and Group Schemes

Abstract: Delta geometry was initially developed by A. Buium as an analogue of differential algebra. In this theory, a non-linear operator δ with respect to a non-zero prime $\mathfrak{p}$ on a fixed number ring plays the analogous role of a derivation in the case of function rings. Such a δ comes from the ring of Witt vectors and its associated lift of Frobenius. As an example, δ on the ring of integers $\mathbb{Z}$ is the Fermat quotient operator given by $\delta x = \frac{x - x^p}{p}$.

Now given a group scheme G defined over a ring with a δ on it, for every n, one can canonically define the arithmetic jet space $J^n G$ which is an extension of G by another group scheme N^n. In this talk, we will discuss the structure of N^n in detail. We will then look into the application of the above in p-adic Hodge theory in the case when G is an abelian scheme.