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Unipotent homotopy theory of schemes

Building on Toen's work on affine stacks, I will discuss a notion of homotopy theory for algebraic varieties, which we call "unipotent homotopy theory". Over a field of characteristic $p > 0$, I will explain how our unipotent homotopy group schemes recover (1) unipotent completion of the Nori fundamental group scheme, (2) p-adic etale homotopy groups, and (3) certain formal group laws arising from algebraic varieties constructed by Artin and Mazur. Time permitting, I will discuss unipotent homotopy types of Calabi–Yau varieties and show that the unipotent homotopy group schemes π_i^U of Calabi–Yau varieties (of dimension n) are derived invariant for all i; the case $i = n$ corresponds to a recent result of Antieau–Bragg. This is a joint work with Emanuel Reinecke.