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Regulators and derivatives of Vologodsky integrals with respect to log(p)

Wednesday, 12 June 2024 14:30 (1 hour)

Often, p-adic regulators for varieties with good reduction can be computed in terms of Coleman integrals. In the bad reduction case one gets meaningful results by replacing Coleman integrals with Vologodsky integrals. These integrals depend on a choice of the branch of the p-adic logarithm, determined by a choice of log(p). In this talk, partially based on joint work with J. Mueller and P. Srinivasan, I will explain why the derivative of the regulator with respect to the branch parameter log(p) is an interesting "discrete regulator" and how it may be computed in terms of derivatives of Vologodsky functions with respect to log(p). Several examples, some of which are conjectural, will be discussed: p-adic heights, non-abelian p-adic Albanese maps, and syntomic regulators.

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