IWASAW MAIN CONJECTURE FOR ELLIPTIC CURVES OVER GLOBAL FUNCTION FIELDS

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Abstract. Consider a global function field $K = \mathbb{F}_q(\mathcal{X})$, $\mathcal{X}$ a complete smooth curve over $\mathbb{F}_q$. Let A be an ordinary elliptic curve defined over K. A formula of Mazur defines for each $\mathbb{F}_q$-rational effective divisor D on $\mathcal{X}$, an element Θ_D in the group ring of the Weil group W_D, which interpolates special values of L-functions associated to A/K and characters of W_D.

Let L/K be a $\mathbb{Z}_p^d$-extension unramified outside a finite set S consisting of ordinary places of K. Denote $\Gamma := \mathrm{Gal}(L/K)$ and $\Lambda := \mathbb{Z}_p[[\Gamma]]$. Let X_L denote the dual p-Selmer group of A/L and let $\mathrm{CH}_\Lambda(X_L)$ denote the characteristic ideal.

In this talk, we introduce a (modified) p-adic L-function $\mathcal{L}_{L/K}$ derived from those Θ_D, $\mathrm{Supp}D \subset S$, and conjecture that it generates $\mathrm{CH}_\Lambda(X_L)$. We shall give some evidence of the conjecture.

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