ONLINE SEMINAR

ARITHMETIC ALGEBRAIC GEOMETRY

(organizers: Grzegorz Banaszak, Piotr Krasoń)

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Equivariant Iwasawa theory for Taelman's class–modules associated to abelian t–modules

Abstract: In joint work with Ferrara, Green and Higgins, we proved an Equivariant Tamagawa Number Formula for the special value at $s = 0$ of a Galois equivariant Goss–type L–function associated to a Drinfeld t–module $\mathcal{E}$ and an abelian Galois extension K/F of function fields. This result was extended to the larger category of abelian t–modules $\mathcal{E}$ in more recent joint work with Green. One of the main consequences of these results is the proof of analogues of the refined Brumer–Stark and Coates–Sinnott conjectures for the data $(K/F, \mathcal{E})$, where the role of the classical ideal–class group and higher Quillen K–groups are played by Taelman's class–modules associated to $\mathcal{E}$ and its Carlitz twists $\mathcal{E} \otimes \mathcal{C}^{\otimes m}$, respectively. Further, these results open the possibility of developing an equivariant Iwasawa theory for Taelman's class–modules along Iwasawa–Carlitz towers (the function field analogues of the cyclotomic $\mathbb{Z}_p$–towers studied in the classical Iwasawa theory of number fields.) After reviewing all the relevant facts, we will describe our progress to date in the development of an Iwasawa–Carlitz theory for Taelman's class–modules, based on ongoing joint work with Higgins.