

STICKELBERGER SERIES AND MAIN CONJECTURE FOR FUNCTION FIELDS

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Abstract: Let F be a global function field of characteristic p with ring of integers A and let Φ be a Hayes module on the Hilbert class field H_A of F . We prove an Iwasawa Main Conjecture for the \mathbb{Z}_p^∞ -extension \mathcal{F}/F generated by the \mathfrak{p} -power torsion of Φ (\mathfrak{p} a prime of A). The main tool is a Stickelberger series whose specialization provides a generator for the Fitting ideal of the class group of \mathcal{F} . Moreover we prove that the same series, evaluated at complex or \mathfrak{p} -adic characters, interpolates the Goss Zeta-function or some \mathfrak{p} -adic L -function, thus providing the link between the algebraic structure (class groups) and the analytic functions, which is the crucial part of Iwasawa Main Conjecture.

2010 Mathematics Subject Classification: 11R23, 11R60, 11R58, 11M38, 11S40.

Key words: function fields, Iwasawa Main Conjecture, \mathfrak{p} -adic L -functions, Stickelberger series, divisor class groups.