

ALGEBRA
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Special values of function field Dirichlet L-functions

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Abstract: Similar to Euler's formula that values of the Riemann zeta function at positive even integers are rational multiples of powers of π , one knows that values of Dirichlet L-functions at positive integers are also expressible in terms of powers of π and values of polylogarithms at algebraic numbers. In this talk we will focus on finding analogies of these results over function fields of positive characteristic. In particular, we will consider special values of Goss L-functions for Dirichlet characters, which take values in the completion of the rational function field in one variable over a finite field. Building on work of Anderson for the case of $L(1, \chi)$, we deduce various power series identities on tensor powers of the Carlitz module that are "log-algebraic" and in turn use these formulas to determine exact values of $L(n, \chi)$ for arbitrary $n \geq 0$. Moreover, we relate these L-series values to powers of the Carlitz period and values of Carlitz polylogarithms at algebraic points.

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