On identities for zeta values in Tate algebras

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Abstract: Let $\mathbb{F}_q$ be a finite field of q elements of characteristic p. Let $A = \mathbb{F}_q[\theta]$ be a polynomial ring. Let $\underline{t}_s = \{t_1, \ldots, t_s\}$ be s variables.

In 2012, Pellarin introduced the following elements called the several variable L-series

$$\zeta_A(1, \underline{t}_s) := L_s(\underline{t}_s) = \sum_{d \geq 0} \sum_{\substack{a \in A \\ a \text{ is monic of degree } d}} \frac{a(t_1) \ldots a(t_s)}{a}$$

In a recent work, Pellarin investigated and formulated several conjectural identities for zeta values in Tate Algebras. He predicts that the several variable zeta values belong to the $\mathbb{F}_p$-algebra generated by negative or positive powers of one-variable zeta values. He suggested an explicit expression for several variable zeta values for q large. In this talk, we will give an answer to this Conjecture (the explicit expression).