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**On zeta elements and refined abelian Stark conjectures.** (English) Zbl 1428.11199  
Tokyo J. Math. 40, No. 1, 123-151 (2017).

Summary: We apply recent methods of *D. Burns* et al. [Doc. Math. 21, 555–626 (2016; [Zbl 1407.11133](#))] to study connections between the values at  $s = 0$  of the higher derivatives of abelian  $L$ -functions of number fields and the higher Fitting ideals of the canonical Selmer groups of  $\mathbb{G}_m$ . Whereas Burns, Kurihara and Sano apply these methods to the setting of the ‘Rubin-Stark conjecture’, we study the ‘evaluators’ defined in a more general setting by *C. J. Emmons* and *C. D. Popescu* [J. Number Theory 129, No. 6, 1350–1365 (2009; [Zbl 1166.11043](#))] and by Vallières in *D. Vallières* [J. Reine Angew. Math. 734, 1–58 (2018; [Zbl 1396.11125](#))].

This allows us to conjecture that the ideals formed from the images of the evaluators can be described precisely in terms of the higher Fitting ideals of the canonical Selmer groups of  $\mathbb{G}_m$ . Moreover, we are able to prove that this conjecture follows from the equivariant Tamagawa number conjecture.

**MSC:**

[11R42](#) Zeta functions and  $L$ -functions of number fields  
[11R23](#) Iwasawa theory

**Keywords:**

Stark conjectures; Fitting ideals

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