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Jim Coykendall and **Felix Gotti*** (felixgotti@berkeley.edu). *On the atomicity of monoid algebras of finite characteristic.*

Suppose that R is an integral domain and M is a commutative cancellative monoid. The question of whether the monoid ring $R[x; M]$ is atomic provided that both M and R are atomic dates back to the 1980's. It was not until 1993 that M. Roitman constructed an atomic integral domain whose polynomial ring is not atomic, answering the question for $M = (\mathbb{N}, +)$. However, the question of whether the monoid algebra $F[x; M]$ is atomic for any field F and any atomic monoid M has been open since then. We provide a negative answer to this question. For each field F of finite characteristic we exhibit a rank-2 totally ordered atomic monoid M such that $F[x; M]$ is not atomic. In addition, we construct a rank-1 totally ordered atomic monoid M such that $\mathbb{Z}_2[x; M]$ fails to be atomic. (Received January 28, 2019)