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The Mordell-Lang theorem for Drinfeld modules. (English) Zbl 1158.11030

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The Mordell-Lang conjecture (now a theorem by *G. Faltings* [Perspect. Math. 15, 175–182 (1994; Zbl 0823.14009)]) asserts that if A/K is an abelian variety over an algebraically closed field of characteristic zero, $\Gamma \subset A(K)$ a finitely generated subgroup, and $X \subset A(K)$ a Zarisky closed subset then the intersection $X \cap \Gamma$ is a finite union of translates of subgroups of Γ. This is a generalization of Falting's theorem stating that the number of rational points on a curve C of genus at least two is finite (embed C in its Jacobian, and use that the group of rational points on J is finitely generated.)

In the present paper similar theorems are shown for powers of a Drinfeld module (so the underlying variety is $\mathbb{G}_a^n$ and the module structure is by a diagonal Drinfeld module action), both in the finite characteristic and the infinite characteristic cases. The statements are roughly of the type: "if X is a Zariski closed subset and Γ a finitely generated sub-module then $X \cap \Gamma$ is a finite union of translates of submodules of Γ", but there are new conditions that do not occur in the classical Mordell-Lang conjecture. The author does give examples to show that these conditions can not be dropped.

Reviewer: Lenny Taelman (Leiden)

MSC:

11G09	Drinfel'd modules; higher-dimensional motives, etc.	Cited in **3** Reviews
14L15	Group schemes	Cited in **13** Documents

Keywords:

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