Recent applications of unit equations over function fields

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Unit equations are known to have many applications in Number Theory, especially to solve certain classes of Diophantine equations as Thue equations, hyperelliptic equations or the zero-multiplicity of linear recurrences. It is also well-known that over function fields, in contrast to the classical case, unit equations can be solved effectively by using Mason's inequality or its generalisations (e.g. by Brownawell and Masser). In this talk I will survey some new applications of unit equations over function fields to

- parametrized families of Thue equations in polynomials (e.g. a function field analog of Thomas' family is completely solved),

- Diophantine m-tuples for polynomials (we give bounds for polynomial Diophantine $D(n)$-tuples, where n is a linear polynomial) and

- effective bounds for the zeros of linear recurrences over function fields and of related equations as the intersection of two recurrences.

The mentioned applications were obtained jointly with V. Ziegler, A. Dujella and A. Pethő, respectively.

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