

# REAL TURRITTIN'S THEOREM AND APPLICATIONS TO TRAJECTORIES OF VECTOR FIELDS

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ABSTRACT. A classical result known as Turrittin's Theorem establishes normal forms for a system of linear ODEs with complex formal meromorphic coefficients. Essentially, the system can be diagonalized, up to a finite jet of degree equal to the Poincaré rank, by means of polynomial gauge transformations and ramifications. In this talk, we present a version of this result in the case of the real base field, where we require that all the transformations are given by matrices with real coefficients. This is a joint work with M. Barkatou and F. A. Carnicero.

In the second part of the talk, we present a result where real Turrittin's Theorem plays an important role. Namely, we show that to any given formal invariant curve  $\Gamma$  of a real analytic vector field  $\xi$  at  $(\mathbb{R}^n, 0)$  there corresponds an actual trajectory of  $\xi$  accumulating to 0 and asymptotic to  $\Gamma$ . This is a joint work with F. Cano and O. LeGal.

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