

Title:

Hilbert number for a family of piecewise nonautonomous equations

Abstract:

For the family $x' = (a_0 + a_1 \cos t + a_2 \sin t)|x| + b_0 + b_1 \cos t + b_2 \sin t$, we solve three basic problems related to its dynamics. First, we characterize when it has a center (Poincaré center focus problem). Second, we show that each equation has a finite number of limit cycles (finiteness problem), and finally we give a uniform upper bound for the number of limit cycles (Hilbert problem 16).