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GLOBAL CENTERS IN PIECEWISE LINEAR EQUATIONS IN THE CYLINDER

We characterize global centers (all solutions are periodic) of the piecewise linear equation $x' = a(t)|x| + b(t)$ when the coefficients a, b are trigonometric polynomials, under some generic hypotheses.

We prove that the global centers are those determined by the composition condition on a, b . That is, the equation has a global center if and only if there exist polynomials P, Q and a trigonometric polynomial h such that $a(t) = P(h(t))h'(t)$, $b(t) = Q(h(t))h'(t)$.