Complex dynamics in periodically perturbed Duffing equations with singularities

Fabio Zanolin  
*University of Udine*  
fabio.zanolin@uniud.it

Lakshmi Burra  
*International Institute of Information Technology, Hyderabad, India*  
lakshmi.burra@iiit.ac.in

We present some examples of periodically perturbed Duffing equations \( x'' + g(x) = p(t) \), where \( g : (0, +\infty) \to \mathbb{R} \) has a singularity at the origin: \( g(0^+) = -\infty \). We prove the existence of infinitely many subharmonic solutions, as well as the presence of chaotic-like dynamics, as a consequence of a topological horseshoe type geometry.