

**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  $g : (0, +\infty) \rightarrow \mathbb{R}$  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.