The bifurcation theory of quadratic isochronous centers revisited.

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Abstract

In this talk we study the bifurcations of the isochronous quadratic system

$$X_0 : \begin{cases} \dot{x} = -y - x^2 + y^2, \\ \dot{y} = x - 2xy \end{cases} \tag{1}$$

with respect to arbitrary quadratic deformations. We use this example to outline a general bifurcation theory of plane systems of infinite co-dimension. The periods appear in the talk in the form of iterated Abelian integrals of length one and two.