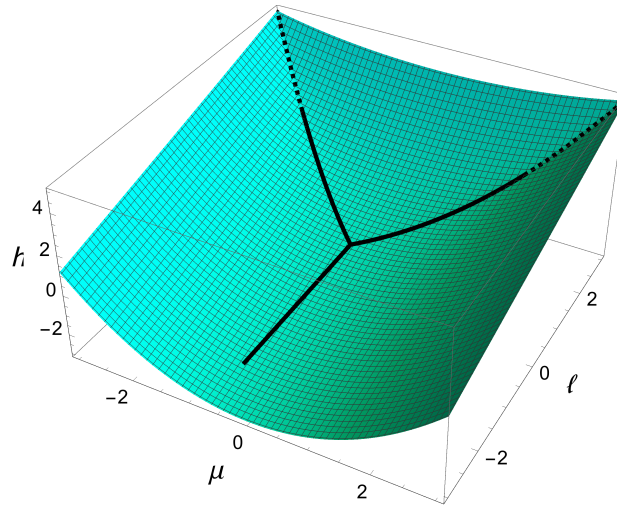


BIFURCATIONS AND MONODROMY OF THE AXIALLY SYMMETRIC 1:1:−2 RESONANCE

Konstantinos Efstathiou

Zu Chongzhi Center for Mathematics and Computational Sciences
Duke Kunshan University



ABSTRACT

In this talk, based on joint work with Heinz Hanßmann and Antonella Marchesiello [1], we consider integrable Hamiltonian systems in three degrees of freedom near an elliptic equilibrium in 1:1:−2 resonance. The integrability originates from averaging along the periodic motion of the quadratic part and an imposed rotational symmetry about the vertical axis. Introducing a detuning parameter we find a rich bifurcation diagram, containing three families of Hamiltonian Hopf bifurcations that join at the origin. I describe the monodromy of the resulting ramified 3–torus bundle as variation of the detuning parameter lets the system pass through the 1:1:−2 resonance.

REFERENCES

- [1] K. Efstathiou, H. Hanßmann, and A. Marchesiello. “Bifurcations and Monodromy of the Axially Symmetric 1:1:−2 Resonance”. In: *Journal of Geometry and Physics* 146 (2019), p. 103493. DOI: 10.1016/j.geomphys.2019.103493.