Hamiltonian Hopf bifurcations in Gaudin models

Tobias Våge Henriksen

(Antwerpen)

Wednesday, November 6, 2024
16:00-17:00h on campus in M.G.004
Analysis & Geometry Seminar, Antwerpen

We show that su(2) rational and trigonometric Gaudin models, or in other words, generalised coupled angular momenta systems, have singularities that undergo Hamiltonian Hopf bifurcations. In particular, we find a normal form for the Hamiltonian Hopf bifurcation up to sixth order, letting us determine when the bifurcation is degenerate or not. Furthermore, in the non-degenerate case we may use the fourth order terms to determine whether the bifurcation is supercritical or subcritical; whether a flap appears in the image of the momentum map or not. Finally, figures illustrating some of the bifurcations taking place in su(2) Gaudin models are presented, showing that there are more bifurcations occurring than only Hamiltonian Hopf ones.