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# On bifurcation phenomena in resonant Hamiltonian systems

**Tobias Henriksen**

**(Antwerp & Groningen)**

This talk will touch upon bifurcations in four different resonances: the 1:-1, 1:-2, and 1:±3 resonance. In particular, in the 1:-1 resonance, we discuss the Hamiltonian Hopf bifurcations, and its presence in Gaudin models, which can be seen as generalised coupled angular momenta systems. In the 1:-2 resonance, we discuss the so-called double flip bifurcation, and see different ways that it can occur in Hamiltonian systems. We also provide a normal form for this bifurcation. Finally, in the 1:±3 resonance, we find the different bifurcation diagrams for the unfolding of the relevant Birkhoff normal form. It turns out to be 4 different generic bifurcation diagrams in the 1:3 resonance, and 14 in the 1:-3 resonance.