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Periodic orbits and $\mathcal{C}^1$-integrability in the planar Stark-Zeeman problem

The aim of the present talk is to study the periodic orbits of a hydrogen atom under the effects of a circularly polarized microwave field and a static magnetic field orthogonal to the plane of polarization of the magnetic field via averaging theory. Moreover, the technique used for proving the existence of isolated periodic orbits allows us to provide information on the $\mathcal{C}^1$–integrability of this mechanic–chemical system.