

*The hydrogen atom in a circularly polarized (CP) microwave field:  
Hopf bifurcation and chaos*

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We consider the CP problem, i.e., the hydrogen atom in a rotating electric field, whose dynamics is described by a Hamiltonian of two degrees of freedom depending on one parameter,  $K > 0$ . We analyse the Hopf bifurcation appearing around one of the equilibrium points when  $K$  crosses a critical value  $K_{crit}$ . Such analysis is done, first from a theoretical point of view, and in a local region, by means of normal form techniques, and, second, from a global point of view through massive numerical simulations. The effect of this bifurcation, focussing on regular and bounded motion versus chaotic one is also discussed.

The fulltext and details of the subject of the talk have been recently published in [1].

This is a joint work with Jan R. Pacha.

REFERENCES

- [1] M. Ollé and J. R. Pacha, CNSNS, 62 (2018), 27–60.