

# REGULARIZATION OF THE KEPLER PROBLEM ON THE SPHERE

**Manuele Santoprete<sup>1</sup>**

<sup>1</sup>Department of Mathematics  
Wilfrid Laurier University  
75 University Avenue West  
Waterloo, ON  
msantopr@wlu.ca

## Abstract

In this talk I will present some results concerning the Kepler problem on the three-sphere  $S^3$ , that I obtained in collaboration with Shengda Hu [1]. I will show how to perform a Moser-type regularization and how to adapt the Ligon-Schaaf regularization to the problem under consideration. Then, I will explain the relationship between these regularizations and the corresponding regularizations for the Kepler problem in  $\mathbb{R}^3$ . This will be done by showing that the Moser regularization and the Ligon-Schaaf map we obtained can be understood as the composition of the corresponding maps for the Kepler problem in Euclidean space, and the gnomonic transformation.

## REFERENCES

- [1] S. Hu, M. Santoprete, Regularization of the Kepler problem on the Sphere, *Canadian Journal of Mathematics*, <http://dx.doi.org/10.4153/CJM-2012-039-9>, (to appear in print)