



Research Seminar Program

UC|UP Joint PhD Program in Mathematics

Date and Time. October 22, 2015 - 14h00

Place. Room M031, Department of Mathematics, University of Porto

Speaker. Fátima Pina ¹

Title. Rolling Maps and Applications

Abstract. Rolling motions are rigid motions subject to holonomic and nonholonomic constraints. These motions appear associated to certain engineering areas, such as robotics and computer vision. Rolling maps are the mathematical tools to describe rolling motions.

In this talk, the concept of rolling map in a Riemannian framework will be presented together with some properties and applications. From the nonholonomic constraints of no-slip and no-twist the kinematic equations of motion can be derived. This will be done for the rolling of some particular manifolds that play an important role in applications. Explicit solutions of the kinematic equations will be derived when the manifolds roll along geodesics.

¹Fátima Pina is a student for the Joint PhD Program in Mathematics UC|UP working at University of Coimbra in the area of "Differential Geometry / Dynamical Systems" under the supervision of Prof. Fátima Silva Leite.