

1154-70-605

**Connor Jackman\*** (`connor.jackman@cimat.mx`). *Lie point symmetries of the planar Kepler problem.*

The Kepler problem is the attractive central force problem with a force proportional to the inverse square of the distance. In this talk we will find diffeomorphisms of the plane with the property that they preserve orbits of the Kepler problem – conics with focus at the origin are sent to conics with focus at the origin. When one fixes a non-zero energy and asks to preserve this energy as well, we will show that these symmetry groups are  $SL_2(\mathbb{R})$ . Moreover, we will see that this Lie point symmetry group  $SL_2(\mathbb{R})$  is exceptional among central force problems with fixed energy. (Received September 08, 2019)