

# Hamiltonization of a homogeneous ball on a convex surface of revolution

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In this talk, I will present the hamiltonization problem of nonholonomic systems from a geometric perspective. In particular, we show that the nonholonomic system formed by a homogeneous ball rolling without sliding in the interior side of a convex surface of revolution is hamiltonizable after a reduction process by a Lie group. Indeed, we find a gauge transformation of the nonholonomic bracket preserving the dynamics in such a way that the reduced bracket (on the reduced space) is Poisson and has a symplectic foliation determined by the level sets of two Casimirs induced by the first integrals of the system.