

Sean Gasiorek (Cal Poly)

Monday October 30th 2 pm

Title: Dynamics and Periodicity Conditions for the Integrable Boltzmann System

Abstract: Consider a simple mechanical system proposed by Boltzmann in the 1860's: a massive particle moves in a gravitational field with a linear boundary between the particle and the center of gravity. Reflections off the boundary are absolutely elastic and obey the billiard reflection law: angles of incidence and reflection are congruent. This system was recently shown by Gallavotti and Jauslin to have a second integral of motion. We study its dynamics and prove the existence of caustics, Cayley-type periodicity conditions, and more. This is joint work with Milena Radnović (University of Sydney)