Abstract:
Tia is an aspiring globetrotter with a simple method of exploration: she walks straight ahead. Suppose Tia is randomly dropped on the surface of a unknown planet, which she investigates using her simple strategy. What will Tia get to see as she travels along the geodesic she is on? The answer to this question depends on the geometry of the surface she is on, and it can be partially addressed by studying the relationship between the curvature of a surface and the dynamics of its geodesic flow. In this talk, I will state a motivating set of results concerning the relationship between geometry and dynamics, discuss more recent work in this area, and show pictures of some surfaces whose geodesic flows have surprising dynamical properties.