A brief Introduction to Riemannian Geometry

Abstract:
Riemannian geometry is an important topic in differential geometry concerned with the geometry of differentiable manifolds equipped with a metric. This allows one to describe the curvature of a manifold. The study of Riemannian manifolds had uncovered deep connections between curvature and topology (e.g. the Gauss-Bonnet theorem). In this talk I will give an elementary introduction to some of the basic ingredients in the theory: vector fields, the metric tensor, connections and geodesics, and finally, the curvature tensor. I will focus on the 'model' geometries which help one develop an intuitive understanding.