Math 515, Fall 2012
Riemannian Geometry

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Meeting times: MW 1:10-2:30 pm, SCIE 618
Office hours: By appointment, or drop in. Likely times are MWF mornings, TR any time (sometimes I may be out in the afternoons).

Text: Riemannian Geometry, Manfredo do Carmo
References: A Panoramic View of Riemannian Geometry, Marcel Berger
Semi-Riemannian Geometry, Barrett O’Neill

Course overview: We will the basics of Riemannian geometry. My first aim is to give a strong foundation for reading in the area. We will carefully cover Riemannian metrics, connections, curvature, and geodesic behavior. (Chapters 1-7 of the text). After this we will prove some of the bigger theorems contained in later chapters. The exact material will depend on time and student interest, but one likely strategy is to cover material in chapters 9, 10 and 12 on variations, comparison theorems, and fundamental groups for negatively-curved manifolds.

In the first week we will give a very quick review of manifolds and tangent spaces.

Logistics: We will have occasional problem sets. Students may give a talk in class in lieu of some problem set(s).