

# Graduate Seminar in Mathematics

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**Friday, January 25, 2013  
2:00p.m., HH-3017**

*Einstein Manifolds and Black Hole horizons*

## **Abstract:**

Einstein metrics have constant Ricci curvature and arise naturally in Riemannian geometry as critical points of a natural variational problem on closed manifolds. They also play an important role in mathematical physics as solutions to the PDEs governing the gravitational field. I will review all the relevant aspects of Riemannian geometry and discuss some recent work on the construction of Einstein metrics on sphere bundles. I will also explain how a similar set of geometries arise in the context of the classification problem of black holes in general relativity.