

Mathematics Student Colloquium

**Prof. Jacob Sturm**

**The Gauss-Bonnet  
Theorem**

*Abstract: A basic theorem in geometry says that the sum of the interior angles of a Euclidean triangle is  $\pi$ . This is an example of what is called a “local-global theorem.” It relates a local geometric property (angle measurement) to a global property (that of being a three-sided polygon). The Gauss-Bonnet theorem is a local-global theorem for compact two-dimensional surfaces. It says that the integral of the curvature equals  $2\pi$  times the Euler characteristic. I will discuss some basic notions from differential geometry and then give a proof of the Gauss-Bonnet theorem.*

**Wednesday, November 5**

**4:00-5:00pm  
204 Smith Hall**