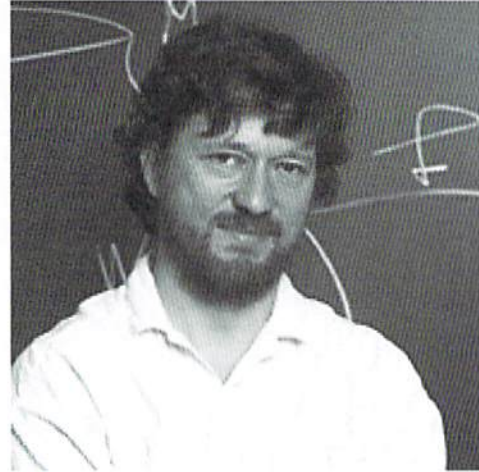


***TOPOLOGY AND GEOMETRY SURVEY  
SERIES***

**Guest Speaker: Stephan Stolz**  
**University of Notre Dame**



**Date:** Tuesday, August 28, 2018

**Time:** 11:45 AM

**Location:** 215 Hayes-Healy Hall

***Lecture Title:***  
**Index Theory, part 3**

***Abstract***

The principal symbol of an elliptic operator on a manifold  $X$  represents an element in the relative K-theory  $K(T^*X, (T^*X)_0)$ , where  $T^*X$  is the cotangent bundle of  $X$ , and  $(T^*X)_0$  is the subspace of non-zero cotangent vectors. A spin structure on  $X$  determines a Thom class  $U \in K(T^*X, (T^*X)_0)$ ; hence every element of  $K(T^*X, (T^*X)_0)$  is of the form  $U$  times a pullback of a vector bundle  $V$  over  $X$ . In this lecture we describe the elliptic operator whose principal symbol is that K-theory element; this operator is called the Dirac operator on  $X$  twisted by  $V$ .