

Title: Product manifolds with improved spectral cluster and Weyl remainder estimates.

Abstract: In this talk we will discuss improved spectral cluster and Weyl remainder estimates on certain product manifolds. In particular, if we assume that  $Y$  is a compact Riemannian manifold with improved  $L^q$  eigenfunction estimates then, at least for large enough exponents, one always obtains improved  $L^q$  bounds on the product manifold  $X \times Y$  if  $X$  is another compact manifold. Similarly, improved Weyl remainder term bounds on the spectral counting function of  $Y$  lead to corresponding improvements on  $X \times Y$ . The proof is based on the structure of the product metric and the kernel estimates for Bochner-Riesz operators on compact manifold. This is based on joint work with Christopher Sogge and Micheal Taylor.