

Abstract submitted for Celebration of Women in Australian Mathematical Sciences

Title: An L^2 -index theorem for group actions of noncompact quotients

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Atiyah's L^2 -index theorem relates the index of an elliptic operator on a closed manifold to the L^2 -index of the elliptic operator lifted to a covering space. The theorem is useful in the study of existence of nontrivial solutions for elliptic PDE on noncompact manifolds, for example, L^2 -harmonic forms. In this talk, we consider a type of noncompact manifolds, so-called manifolds with regular exhaustion, introduced by Roe, and show that Atiyah's L^2 -index theorem still holds. This is joint work with Guoliang Yu and Dapeng Zhou.