

RIESZ TRANSFORMS, POINCARÉ INEQUALITIES AND HODGE THEORY ON COMPLETE RIEMANNIAN MANIFOLDS

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Abstract: During the decade 1930-1940, Sir W. Hodge established the Hodge theory on compact Riemannian manifolds. Since then, many people have tried to extend the Hodge theory to complete non-compact Riemannian manifolds. In my talk, I will first review some known results on the L^2 -Hodge theory on complete Riemannian manifolds. Then I will describe my recent work on the L^p -Hodge theory on complete Riemannian manifolds for $p \neq 2$, in which the Riesz transforms and the Poincaré inequalities play an important role.