

## *Vanishing Results on Weighted Manifolds with Lower Bounds of the Curvature Operator*

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In this talk, we will present our recent results about  $p$ -harmonic forms on Riemannian manifolds. We apply a new Bochner technique introduced in the recent work by Petersen and Wink to investigate vanishing properties of  $p$ -harmonic  $\ell$ -forms on a Riemannian manifold  $M$ . Assuming that  $M$  is a complete, noncompact  $n$ -dimensional manifold with an  $(n - \ell)$ -positive curvature operator, we demonstrate that any  $p$ -harmonic  $\ell$ -form on  $M$  with finite  $L^q$ -energy must be trivial. To establish this result, we consider a general framework for a complete noncompact weighted Riemannian manifold  $(M, g, e^{-f}d\mu)$  where the weighted curvature operator is bounded from below. By assuming the validity of a Sobolev inequality on  $(M, g, e^{-f}d\mu)$ , we apply the Moser iteration technique to estimate the sup-norm of forms and verify their vanishing properties. This talk is based on the joint work with Nguyen Thac Dung (VNU) and Juncheol Pyo (PNU).

**Keywords:**  $p$ -harmonic forms; Bochner techniques; Curvature operator; Moser iteration; Sobolev inequality.

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