1086-58-1734 **Nelia Charalambous*** (nelia@ucy.ac.cy) and **Zhiqin Lu**. *The essential spectrum of the Laplacian on open manifolds.* Preliminary report.

The essential spectrum of the Laplacian on functions has been extensively studied. It is known that on hyperbolic space a spectral gap appears, whereas is has been conjectured that on manifolds with uniformly subexponential volume growth and Ricci curvature bounded below the essential spectrum is the nonnegative real line $[0, \infty)$. So far it has only been proved under some strict asymptotic decay assumption on curvature to guarantee uniformly subexponential volume growth. Our goal was to generalize the set of manifolds for which the L^2 spectrum is the nonnegative real line. In our work with Zhiqin Lu we circumvent Sturm's Theorem, and prove instead a generalization of Weyl's criterion for the essential spectrum. As a result, we will no longer need to assume uniform subexponential volume growth for the manifold. Instead, we will only suppose that Ricci curvature is asymptotically nonnegative in the radial direction. Our condition on curvature only imposes subexponential volume growth at a point. We will prove that on such manifolds the L^2 essential spectrum is $[0, \infty)$. We also use our criterion to compute the essential spectrum of a complete shrinking Ricci soliton and of manifolds that posses an exhaustion function. (Received September 24, 2012)