

# Heat content and torsion function in non-compact Riemannian manifolds

Michiel van den Berg (Bristol)

**Abstract.** We discuss the heat content of open sets in a complete, smooth, non-compact,  $m$ -dimensional Riemannian manifold  $M$  without boundary, where  $M$  satisfies a two-sided Li-Yau gaussian heat kernel bound. We show that the Dirichlet torsion function  $v_\Omega$  for an open set  $\Omega \subset M$  is bounded if and only if the spectrum of the Dirichlet Laplace Beltrami operator acting in  $L^2(\Omega)$  is bounded away from 0. Joint work with Hiroaki Aikawa, Chubu University, and Jun Masamune, Hokkaido University.