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Hui-chuan Huang* (huichuan@math.msu.edu), Department of Mathematics, Wells Hall, Room A303, Michigan State University, East Lansing, MI 48824. *The resolvent and scattering operator on near-product-hyperbolic spaces.*

This work is in differential geometry and analysis. Motivations of this paper come from the attempt of realizing the Laplacian on global and local symmetric spaces by a purely analytic strategy rather than group theoretic methods. Our background spaces, the product hyperbolic spaces and their perturbations, serve as the relatively simple examples of higher rank symmetric spaces and their geometric generalizations.

There are two main parts in this paper. In the first part, we study the scattering operator for Laplacian on the product of the asymptotically hyperbolic manifolds. We show that the scattering operator be the superposition of the two scattering operators for the two product components. We also describe the asymptotic behavior of generalized eigenfunctions and the precise form of the spectral measure. The second part is about the Laplacian of a near-product-hyperbolic space. We use a parametrix construction process to study the resolvent for Laplacian on the products of hyperbolic spaces and their perturbations. A suitable compactification of the product of background spaces is also given during the construction such that the Schwartz kernel of resolvent is polyhomogeneous on it. (Received September 09, 2006)