Global harmonic analysis

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The harmonics on a compact Riemannian manifold are the mathematical functions which describe the natural modes of oscillation. They are described by the eigenfunctions of the Laplacian, whose behaviors are heavily influenced by the global geometry of the manifold. In this talk, we discuss this relation in the study of global harmonic analysis, through two symmetric spaces: compact hyperbolic surfaces (constant negative curvature) and spheres (constant positive curvature). We explain how Laplacian eigenfunctions behave, both similarly and differently, on these two geometries.