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On the symmetry conjecture for eigenfunctions

In this talk we will provide a brief introduction to the eigenfunctions of the Laplace-Beltrami operator. We will then focus on the so-called symmetry conjecture and a natural variant raised by Nadirashvili and Jakobson. In particular we will present certain results (positive and negative) obtained in collaboration with F. Torres de Lizaur, and extended by a group of students during last summer at the Fields Undergraduate Summer Research Program under our supervision. Time permitting we will comment on work in progress and open questions.