# On the first Laplace eigenvalue of a homogeneous sphere

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We will show an explicit expression for the lowest positive eigenvalue of the Laplace-Beltrami operator associated to any homogeneous sphere (a sphere endowed with a Riemannian metric such that the action of its isometry group on it is transitive). The expression is in terms of the parameters defining the homogeneous metric. As a consequence, we will show that the Laplace spectrum distinguishes any metric among homogeneous spheres, and furthermore, we will obtain some applications to the Yamabe problem. Part of these results is in collaboration with Renato Bettiol and Paolo Piccione.