

Break of symmetry for an overdetermined problem in a cone

Filomena Pacella¹

¹ Sapienza University of Rome

We present some results about the problem of characterizing domains in cones for which a solution of an overdetermined problem exists. In recent papers in collaboration with G. Tralli it is shown that if the cone is convex the only domains with this property are spherical sectors centered at the vertex of the cone. This still holds if the cone is almost convex but it is not expected to be true for general nonconvex cones. Some recent results in collaboration with A. Iacopetti and T. Weth relate this question to the study of the first nontrivial Neumann eigenvalue of the Laplace-Beltrami operator on domains on the unit sphere allowing to determine classes of nonconvex cones for which the spherical sectors are not the only domains which admit a solution for the overdetermined problem.