Meeting: 1003, Atlanta, Georgia, SS 11A, AMS Special Session on Riemannian Geometry, I

1003-51-1646 **Rafal Komendarczyk*** (rako@math.gatech.edu), School of Mathematics, 686 Cherry St., Atlanta, GA 30332. *Nodal sets and contact structures.*

One of the major questions in 3-dimensional contact geometry is the classification problem of tight contact structures. If equipped with an adapted Riemannian metric, contact structures become divergence-free, co-closed eigenforms of the Laplace-Beltrami operator. The natural question is whether we can characterize properties of metrics which arise from tight/overtwisted contact structures. In this talk I will show how this problem is related to the question of shape and topology of nodal sets for solutions of certain scalar elliptic PDEs. A better understanding of topology of these sets may shed a light on the classification problem. Similar questions have been also raised by S. Yau in "Open Problems in Geometry", Lectures on Differential Geometry 1994. (Received October 05, 2004)