Ram Band (Technion, Haifa / U Potsdam):
Spectral flows and the Robin count deficiency for metric graphs

We introduce the Robin count, a generalization of the nodal and Neumann counts of eigenfunctions. Specifically, we count the number of points with a particular value of f'/f (which is known as the Robin parameter or delta coupling or cotangent of Prufer angle). Correspondingly, we introduce the Robin map (a generalization of the Dirichlet to Neumann map) and prove an index theorem - relating the Morse index of the Robin map with the Robin count deficiency. In this context, we discuss the relations between spectral flows, the Morse index and the Maslov index. It is shown that spectral flows may be used to express geometric properties of a graph, such as the number of interaction vertices and the first Betti number.

This is a joint work with Marina Prokhorova and Gilad Sofer.