Abstract

The asymptotic spectral flow is first introduced and discussed by Taubes as an important part in his proof of the Weinstein conjecture in dimension 3. Here we present an alternative approach and improved his result. Based on the relation between spectral flow and eta invariant, the estimate consists of a direct calculation of the variation of eta invariant and an estimate of eta invariant. The technique of the local index theorem, Getzler rescaling, plays an important role in both the parts. In particular, the estimate of eta invariant is achieved with a uniform heat kernel estimate that combined the method of Bismut-Freed and Dai-Liu-Ma. This is joint work with my doctoral advisor Xianzhe Dai.