## Abstract

Given two metrics on a fixed topological surface, we will investigate how the length of closed curves can tell the difference of the geometry. We will focus on the metrics coming from quadratic differentials, which are called flat metrics, and show that for fixed two flat metrics, there must exist one simple closed curve whose length is greater in one metric than the other. We will first recall basic properties of flat metrics, briefly sketch the marked length spectrum rigidity and apply the techniques developed there to prove the main result.