Hodge theory and rigidity for Teichmuller dynamics

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The dynamics of the SL(2,R)-action on the space of flat surfaces is related to many questions in classical dynamics, such as interval exchanges or billiards in polygons. It also exhibits similarities with the case of homogeneous spaces and is related to questions in algebraic geometry or arithmetic. Many of the connections arise via Hodge theory. In this talk, I will explain how techniques from Hodge theory can be used to obtain rigidity results for the dynamics of the SL(2,R)-action. Combined with estimates coming from random walks, this has some geometric consequences for the action. I will introduce the necessary background from Hodge theory and Teichmuller dynamics.