

MATHEMATISCHES FORSCHUNGSINSTITUT OBERWOLFACH

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## Billiards, Flat Surfaces, and Dynamics on Moduli Spaces

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**ABSTRACT.** This workshop brought together people working on the dynamics of various flows on moduli spaces, in particular the action of  $SL_2(\mathbb{R})$  on flat surfaces. The new results presented covered properties of interval exchange transformations, Lyapunov spectrum of this flow and the geometry of Teichmüller space.

*Mathematics Subject Classification (2000):* 32G15, 30F30, 37D40, 28D.

### Introduction by the Organisers

Billiards in polygons provide much of the motivation and the many of the main examples of the subject of this workshop. More generally, flat surfaces were the objects of focus of all the participants of this conference. Dynamics on moduli space is a good description of an area that has become very well established in recent years.

Some of the most interesting recent results in this area have arisen from applying methods from quite different subjects. Consequently the workshop had participants with very different backgrounds. These included ergodic theory, topology, (Teichmüller) geometry, geometric group theory, and algebraic geometry. Nevertheless the level of expertise of participants in the common subject of the conference was extremely high. This allowed the organizers to schedule short research talks by almost all individuals or groups who had recent results, and these results were understood by essentially everybody whether the talks were ergodic theoretic, differential geometric, or algebraic geometric in nature.

The area of dynamics on moduli spaces is rapidly evolving. Basically the results presented were limited to new results obtained since the research summer trimester

in HIM in 2010. This suggests that it might be reasonable to preserve the tradition of have yearly conferences in this area of mathematics at institutions such as CIRM, MSRI, Oberwolfach, and HIM.

It has become commonplace that papers written in this area are the collaboration of two or three authors who often live on different continents. The evenings were very densely charged, since all these mostly overlapping small groups were working hard taking advantage of being unified in a nice and creative environment.