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**HYPERBOLIC DYNAMICS AND GEOMETRY:  
THE CIRM CHAIRE JEAN MORLET 2013-14**

*by*

Boris Hasselblatt

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**Abstract.** — To give an impression of the scientific work conducted during the second Jean-Morlet-Professorship, we give an introduction to an interface of the disciplines of dynamical systems and geometry by recalling some of the history to which contemporary questions can be traced, and we briefly describe concretely some of the projects of this Morlet semester. These involve the Hopf argument, which is the main method for proving ergodicity of hyperbolic dynamical systems, a study of when “fat” Sierpiński triangles have interior points, a construction of new “contact” flows from (for instance) geodesic flows, the transition between uniform and nonuniform hyperbolicity and a new invariants for maximal isotropic foliations that holds promise for a novel approach to geometric rigidity.

The main text gives a flavor of these results with varying levels of detail, and for expert readers the appendices provide additional specifics and detail.

## 1. Introduction

The main purpose of this article is to give an impression of some of the work conducted in the Chaire Morlet program. While some results are formally stated, they are meant to convey a flavor rather than impart any working knowledge. Where definitions are omitted, they can generally be found in Wikipedia or in [65].

The subjects described here have in common that they are in some way or other motivated by the historical thread presented in Subsection 1.3, but the subsequent sections are mutually independent and can equally well be browsed haphazardly or read in sequence.

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