Bruno Martelli

Università degli Studi di Pisa

Hyperbolic manifolds that fiber over the circle

Abstract

One of the most intriguing aspects in low-dimensional topology is the existence, discovered by Jorgensen in the late 70s, of hyperbolic 3-manifolds that fiber over the circle. In this talk we will review some aspects of this beautiful theory, with the notable contributions of Thurston, and more recently of Agol and Wise.

Then we will show that this phenomenon is not restricted to dimension 3, by exhibiting some examples in dimension 4 and 5 (in even dimension, some critical points are necessary, and we talk about perfect circle valued Morse functions instead of fibrations). As a consequence, we will deduce that a finite type subgroup of a hyperbolic group needs not to be hyperbolic, thus answering a well-known open question in geometric group theory (joint works with Battista, Italiano, and Migliorini).