Berlin Mathematics Research Center
MATH+

Berlin Mathematical School
BMS

MATH+ Friday Colloquium

Friday 21 May 2021 at 14:15

Online (Zoom)

© Martin R. Bridson,
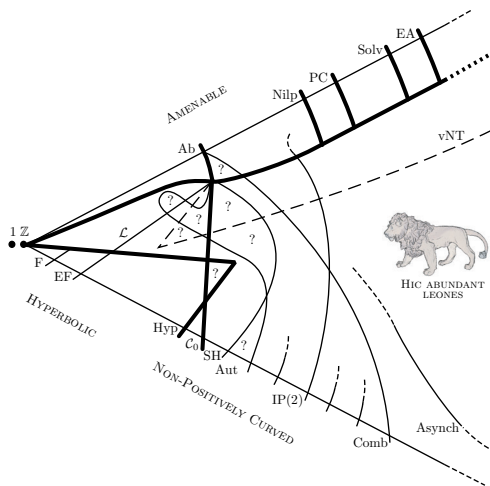"The Universe of Groups"

Martin R. Bridson
(U Oxford)

Chasing finite shadows of infinite groups through geometry

There are many situations in geometry and group theory where it is natural, convenient or necessary to explore infinite groups via their actions on finite objects. But how much understanding can one really gain about an infinite group by examining its finite images? Sometimes little, sometimes a lot.

In this colloquium talk, Bridson will sketch some of the rich history of this problem. He will discuss how hard it is to decide which groups have finite images, connecting this problem to the structure of finite simple groups, and describe how input from geometry and low-dimensional topology, mingling with algebra and arithmetic, have transformed the subject in recent years. He will then explain why certain groups arising in 2-D and 3-D hyperbolic geometry can be distinguished from all other groups using only their finite images and eventually highlight some open problems.

Martin Bridson is the Whitehead Professor of Pure Mathematics at the University of Oxford and President of the Clay Mathematics Institute. His research interests revolve around the interaction of geometry, topology, and group theory. Bridson received his PhD from Cornell in 1991 and subsequently held positions at Princeton, Geneva and Imperial College London. A Fellow of the AMS and the Royal Society, as well as a member of the Academia Europaea, Bridson was an Invited Speaker at the International Congress of Mathematicians in 2006. His other honors include the Whitehead Prize of the London Mathematical Society, the Forder Lectureship of the New Zealand Mathematical Society, a Royal Society Wolfson Research Merit Award, and the Steele Prize of the American Mathematical Society.