



Berlin
Mathematical
School

BMS Friday Colloquium

Friday 16 October 2015 at 14:15

Tea & Cookies starting at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Geordie Williamson

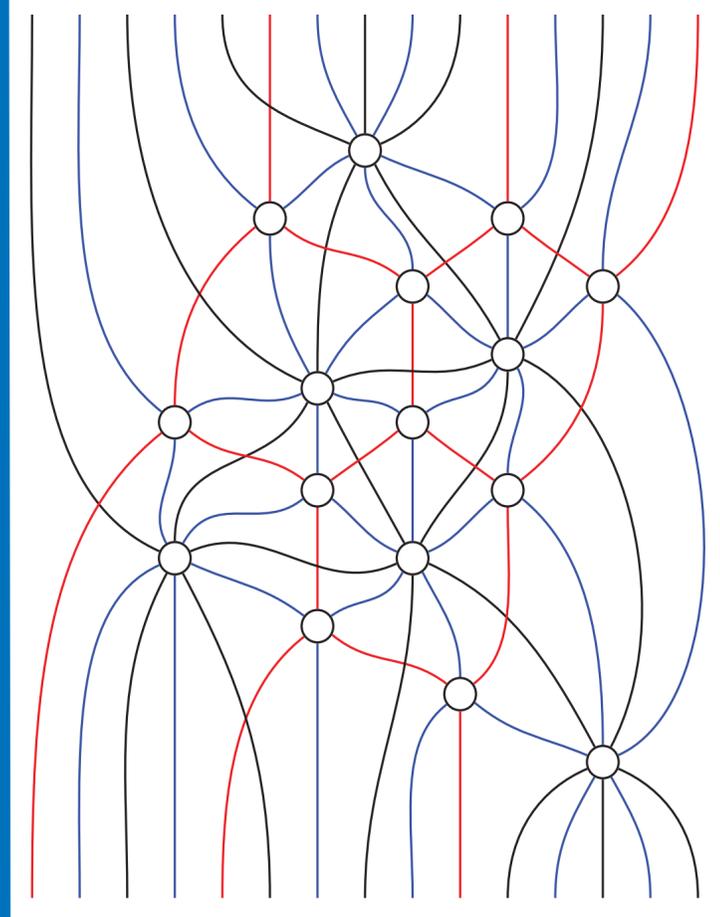
(MPI Bonn)

Mathematics in light of representation theory

Symmetry is all around us. The mathematical study of symmetry becomes simpler when we linearize, and in doing so we enter the realm of representation theory. Representation theory has applications throughout mathematics (the Fourier transform, monstrous moonshine, the Langlands program, the proof of Fermat's last theorem, ...) and science (crystallography and spectroscopy in chemistry, signal processing in engineering, the standard model in physics, ...).

This lecture will be an introduction to the representation theory of finite groups, both over the complex numbers and over fields of positive characteristic (so-called modular representation theory). In his talk, Williamson will discuss Frobenius' discovery of the character table in Berlin in 1896, Brauer's first steps in modular representation theory in the 1930s, and the role of the character table in the discovery of the monster simple group in the 1980s. Throughout, the breadth and depth of the applicability of representation theory to diverse mathematical problems will be emphasized. Williamson will finish with a discussion of fascinating open problems and recent developments in the modular representations of symmetric and finite general linear groups.

Geordie Williamson completed his PhD in Freiburg in 2008 and went on to spend three years as a postdoc at the University of Oxford. Since 2011, he has been an Advanced Researcher at the Max Planck Institute for Mathematics in Bonn. Williamson works on problems in representation theory, algebra and geometry, and has given invited lectures throughout the world, including at MIT, MSRI, RIMS, Sanya and Yale. In 2016, he will be an invited speaker at the European Congress of Mathematics which will be held at TU Berlin.



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