Berlin Mathematical School

BMS Friday Colloquium

Friday 2 February 2018 at 14:15
Tea & Cookies starting at 13:00

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

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Hélène Barcelo
(MSRI Berkeley)

Discrete Notions of Homotopy and Homology

In 1847, the German mathematician Johann Benedict Listing introduced the term "Topologie" in his treaty, "Vorstudien zur Topologie", on qualitative geometry. While the origin of topology predates Listing's paper, he is the one who coined the term that defines a fundamental area of mathematics, which has spectacularly evolved since the early twentieth century. In 1895, building upon the work of Listing et al., Henri Poincaré published his paper on topology, "Analysis Situs", which, together with a series of five supplements, both systematized topology and launched the subject of algebraic topology by using algebraic structures to distinguish topological spaces from one another. Fundamental to Poincaré's work are the notions of homotopy and homology --- notions that rely on continuous deformations of topological spaces, such as a cup that can be deformed into a donut.

In her talk, Barcelo will define discrete notions of deformations on continuous spaces as well as on discrete ones, such as graphs. She will compare continuous and discrete results, and give applications of the discrete fundamental group of the complement of (real) subspace arrangements.

Hélène Barcelo is a Canadian mathematician and the Deputy Director of the Mathematical Sciences Research Institute (MSRI), located in Berkeley, California. Her research interests lie in algebraic combinatorics. Barcelo got her PhD from the UCSD in 1988 and has held positions at numerous institutions around the world. She is now a Professor Emerita of Mathematics at Arizona State University. From 2013 to 2017, Barcelo served on the AMS Executive Committee, and was recently elected to the 2018 Class of the Fellows of the AMS.

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