

BMS Friday Colloquium



Friday 9 November 2018 at 14:15 Tea & Cookies starting at 13:00

Urania, 2nd floor, An der Urania 17, 10787 Berlin

Raman Sanyal



(Goethe-Universität Frankfurt)

The discrete and the continuous side of valuations — same same but different

A valuation on a collection of sets is a function that satisfies the 3-term inclusion-exclusion formula (as illustrated with the pumpkins). The volume, the number of lattice points and the Euler characteristic are examples of three (very different?) geometric valuations. Valuations have their origin in Max Dehn's solution to Hilbert's third problem on the equidissectability of convex polytopes, and have since developed into an indispensable concept in various areas of geometry.

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Central results on spaces of valuations were obtained by Hadwiger, McMullen, Alesker and others in the *continuous* setting. Meanwhile, Betke, Kneser, Rota and others uncovered the rich structure of valuations in the *discrete* realm. The similarities between the discrete and the continuous side of valuations are striking, probably as striking as their differences. In his talk, Sanyal will illustrate the use of valuations, the similarities, the differences and the challenges.

Raman Sanyal has been a professor at Goethe-Universität Frankfurt since 2016. His fields of interest include discrete and convex (algebraic) geometry. Sanyal completed his PhD as a BMS Phase II student and graduated from the TU Berlin in 2008. After graduating, he was a Miller Research Fellow at UC Berkeley (2009-2011), then took up a postion as a junior professor at the FU Berlin (2011-2016). His awards include the Tiburtius Prize (2008) and, more recently, a research professorship at the Mathematical Science Research Institute, Berkeley (2017). Sanyal was a BMS faculty member from 2011 to 2016.