



Der Wissenschaftsfonds.



Institut für Analysis und Zahlentheorie

**Zahlentheoretisches Kolloquium**

08.10.2019, 15:00

Seminarraum Analysis-Zahlentheorie, Kopernikusgasse 24, 2.OG

## **Random Diophantine equations**

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The analogue of Hilbert's 10th problem over the rational numbers is wide open. It asks whether or not there exists an algorithm for checking the solubility of a given homogeneous polynomial Diophantine equation over the integers. What about if you are allowed to pick a Diophantine equation at random? Assuming that the number of variables exceeds the degree it has been conjectured by Poonen and Voloch that 100 percent of these equations satisfy the local-global principle, which in turn gives an algorithm for checking solubility. I shall report on recent work with Pierre Le Boudec and Will Sawin that comes within a whisker of establishing this conjecture by using techniques from the geometry of numbers.

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