



Berlin
Mathematical
School

BMS Friday Colloquium

Friday 5 July 2013 at 14:15

Tea & Cookies starting at 13:00

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

Mireille Bousquet-Mélou

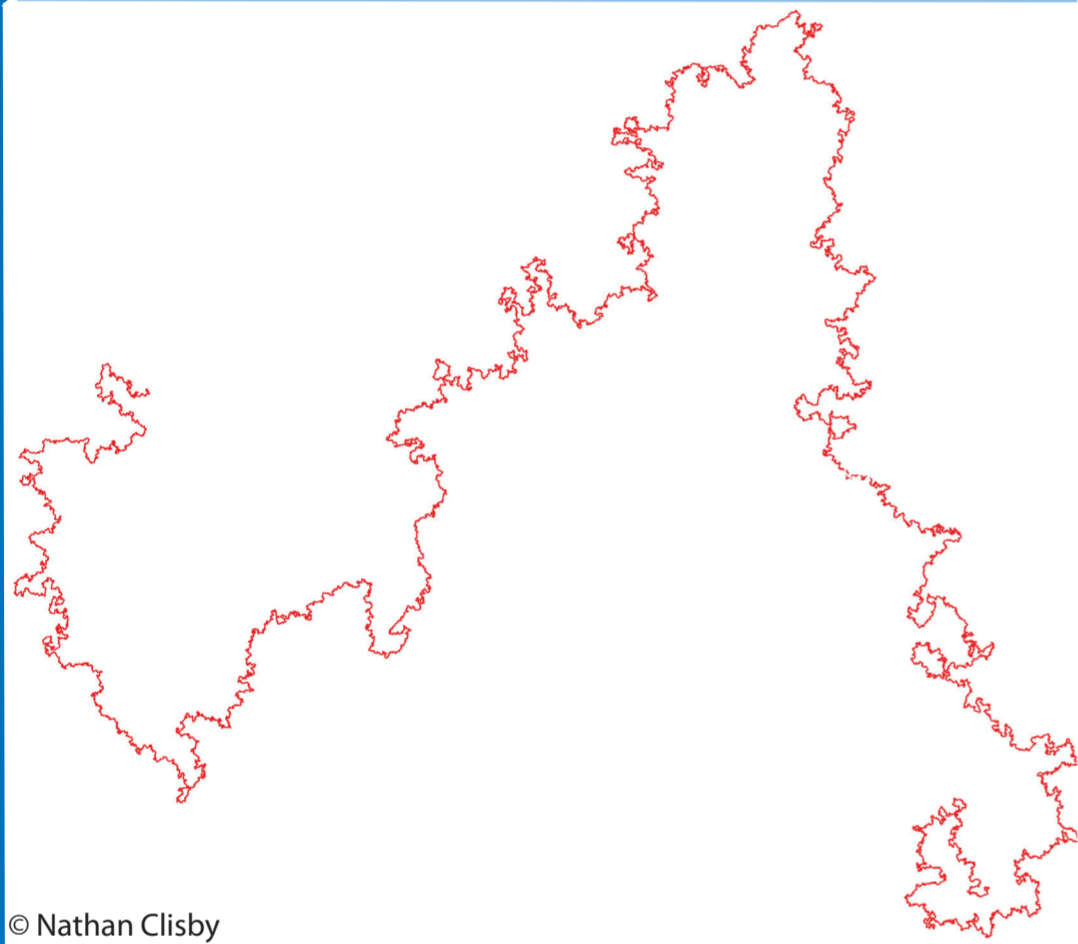
(CNRS, Université de Bordeaux)

Self-Avoiding Walks

A lattice walk is said to be self-avoiding if it never visits the same vertex twice. These simple objects were introduced in physics in the 1940's as a natural model of polymers. Since then, their study, fuelled by beautiful predictions often coming from statistical physics, has become an important topic in combinatorics and probability theory.

As for many lattice models, the properties of self-avoiding walks (SAWs) are better understood in high dimension. Roughly speaking, in dimension 5 and beyond, the properties of SAWs resemble those of random walks (Hara-Slade, 1992). Bousquet-Mélou will focus on the tricky dimension 2, where the most elementary questions remain unsolved: what is, asymptotically, the number of n -step SAWs? What is, on average, their end-to-end distance? Simple answers to these questions have been conjectured decades ago, yet they have resisted all proof attempts so far. Bousquet-Mélou will describe some classical tools, like unfolding and pivot moves. She will also cover recent major progress due to Duminil-Copin and Smirnov, which deals with SAWs on the hexagonal lattice, and some variations on this result.

Mireille Bousquet-Mélou is director of research at CNRS, LaBRI, University of Bordeaux, France. Her main research topics are enumerative combinatorics and applications to the study of large random objects. She did her doctorate and habilitation in enumerative combinatorics at the University of Bordeaux in 1991 and 1996, respectively, and has been at LaBRI since 1990. Bousquet-Mélou is also an editor for the *Journal of Combinatorial Theory Series A*, *Advances in Applied Mathematics*, and *Séminaire Lotharingien de Combinatoire*.



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