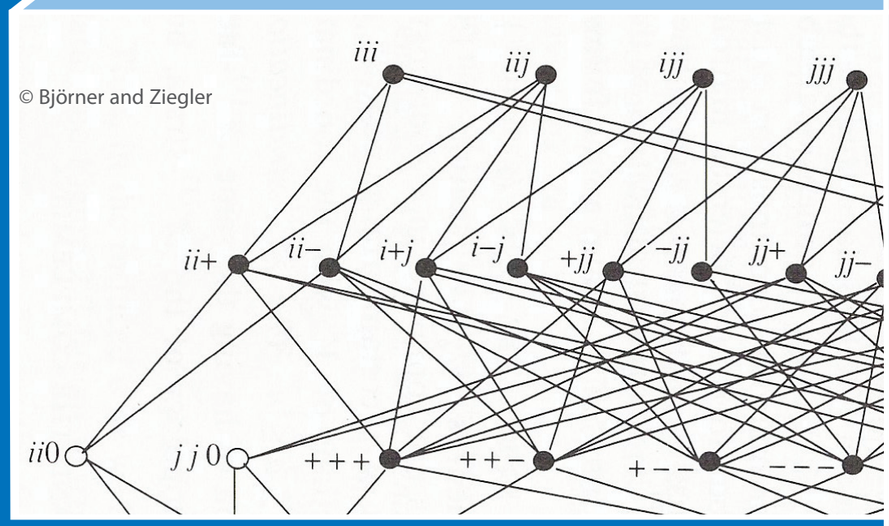
Berlin Mathematical School

BMS Friday Colloquium

Friday 28 November 2014 at 14:15

Tea & Cookies starting at 13:00

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



Anders Björner

(KTH Stockholm)

Random walks on complex hyperplane arrangements and self-organising libraries

The starting point is the pleasant fact that some much-studied random walks on permutations, such as the Tsetlin library, arise from walks on real hyperplane arrangements [Bidigare, Hanlon and Rockmore, 1998]. We explore similar walks on complex hyperplane arrangements. This is achieved by involving certain cell complexes that model the topology of the complement of the arrangement. In a particular case this leads to walks on dynamic Tsetlin-style libraries with several shelves.

These random walks belong to a family of Markov chains, best described in terms of semigroups, that have been studied by K. Brown, P. Diaconis, and others. They have the property that all eigenvalues of the transition matrices are non-negative real and given by a simple combinatorial formula. Background material needed for understanding the walks and the geometric constructions will be reviewed in rather great detail.

Anders Björner is a professor of mathematics at the KTH Royal Institute of Technology and his research interests include combinatorics, related parts of algebra, geometry, topology as well as computer science. Björner got his PhD at Stockholm University in 1979 and in 1983 he was awarded the George Pólya Prize for his work on combinatorial theory. He has been a member of the Royal Swedish Academy of Sciences since 1999, is currently chairman of the board of Institut Mittag-Leffler, and member of the board of trustees of the Nobel Foundation.

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