

Geometry, Groups and Dynamics/GEAR Seminar  
(held at the Illinois hub of GEAR )

**12:00 pm, Thursday, February 4, 2016, 243 Altgeld Hall**

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Flattening equations for Chromatic Polynomials

Abstract: In the 1940s a long treatment of “planar” chromatic polynomials by G.D. Birkhoff and D.C. Lewis led to the discovery of mysterious identities concerning “chromials” obtained by fixing the configuration and varying the boundary coloring pattern. In the 1970s W. T. Tutte at the University of Waterloo (Canada) fruitfully suggested a distinction between “planar” boundary colorings and, the others. Joint research, never fully published, showed that chromials with planar boundary patterns give a linear basis, and dimension numbers form a sequence related to Motzkin and Catalan numbers, which I had previously called Riordan numbers. Given a circular arrangement of vertices, planar partitions may be defined. The unrestricted count is Catalan. To get the numbers  $R(n)$  make the additional restriction that vertices adjacent on the circle cannot be in the same part.

[Video](#)