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Benjamin J Braun* (braun@ms.uky.edu), Dept of Mathematics, University of Kentucky, Lexington, KY 40506, and Matthias Beck (beck@math.sfsu.edu), Dept of Mathematics, San Francisco State University, 1600 Holloway Ave, San Francisco, CA 94132. Nowhere harmonic colorings of graphs. Preliminary report.

Given a simple graph, proper graph colorings and nowhere-zero integer flows are combinatorial structures with interesting enumerative properties. We describe a related combinatorial structure, nowhere harmonic colorings, and show that they are also interesting from an enumerative perspective. Using the theory of inside out polytopes, we obtain enumerative results regarding nowhere harmonic colorings involving quasipolynomials and a combinatorial reciprocity theorem. (Received February 27, 2009)