

1106-92-2024

**Christopher J Hillar\*** ([chillar@berkeley.edu](mailto:chillar@berkeley.edu)), Redwood Center for Theoretical Neuroscience, University of California, Berkeley, 575A Evans Hall, MC 3198, Berkeley, CA 94720. *Biologically inspired real-world applications of discrete mathematics.*

We explain how the problem of sensory coding in theoretical neuroscience led us to the discovery of remarkable properties of maximum entropy distributions on graphs and Hopfield binary recurrent neural networks. Importantly, the algebra, geometry, and combinatorics of such objects plays a major role. (Received September 15, 2014)