

The Density of Costas Arrays Decays Exponentially

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(This talk is based on joint work with Bill Correll and Christopher Swanson.)

Costas arrays arise in radar and sonar engineering: formally they are simply permutation matrices with the extra property that vectors joining pairs of ones are all distinct. Using ideas from random graph theory we prove that the density of Costas arrays among permutation matrices decays exponentially, solving a core theoretical problem for Costas arrays. Many intriguing questions remain open for this interdisciplinary topic at the intersection of combinatorics, probability and enumeration.

Based on joint work in progress with B. Correll and C. Swanson.