

Mathematics Colloquium

Max-Intersection Completeness of Neural Codes and the Neural Ideal

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11:10 am – 12 pm
Building 180, Room 102

Abstract

A neural code C on n neurons is a collection of subsets of $\{1, 2, \dots, n\}$ which is used to encode the intersections of subsets U_1, U_2, \dots, U_n of some topological space. The study of neural codes reveals the ways in which geometric or topological properties can be encoded combinatorially. A prominent example is the property of max-intersection completeness: if a code C contains every possible intersection of its maximal codewords, then one can always find a collection of open convex U_1, U_2, \dots, U_n for which C is the code. In this talk I will answer a question posed by Curto et al. (2018), which asks if there is a way of determining max-intersection completeness from examination of the neural ideal, an algebraic counterpart to the neural code.

About the speaker: Alex Ruys de Perez obtained his PhD from Texas A&M University with advisor Anne Shiu. He is currently a postdoctoral associate at the Southeast Center for Mathematics and Biology at Georgia Tech working with mentors mathematician Dr. Elena Dimitrova (Cal Poly) and bioengineer Dr. Melissa Kemp (Georgia Tech&Emory).