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## Title: Topological Insights in Neuroscience

## Abstract:

The brain of each of us is composed of hundreds of billions of neurons (or nerve cells,) linked by hundreds of trillions of synapses, which transmit electrical signals from one neuron to another. In response to a stimulus, waves of electrical activity pass through the network of neurons, processing the incoming signal. Tools provided by the field of mathematics known as algebraic topology enable us to detect and describe the rich structure hidden in this dynamic tapestry.

In this talk, I'll take you on a mathematical mystery tour of what tools from topology reveal about how the brain processes information, based on collaborations with the Blue Brain Project at EPFL.