DRAT: DOING RANDOM ALGEBRAIC TOPOLOGY

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Over the past few years there has been considerable activity in exploiting the power of algebraic topology to investigate areas outside of mathematics. The phrase 'applied algebraic topology' is no longer an oxymoron!

Even more recently the intrinsically random nature of the world is beginning to bring statistical and probabilistic tools to these problems, leading to the birth of a new area of 'random algebraic topology'.

In this talk I will discuss some of the few results in random algebraic topology, including the persistence homology of the sub-level sets of Gaussian processes over manifolds, and limit theorems for the Betti numbers of random complexes built over random point processes.

Since this is to be a joint Probability/Topology seminar, I shall assume no prior knowledge in either area.