Probability Seminar

Title: Fluctuations in the zeroes of stationary Gaussian processes

Speaker: Jeremiah Buckley (King's College London)

Date: Wed 30th October 2019 at 2:00PM

Location: Seminar Room SCN 1.25

Abstract: The zeroes of a stationary Gaussian process on the real line are a classical object, and the mean number of zeroes is given by the famous Kac-Rice formula. A formula in a similar spirit, due to Cramér-Leadbetter ('65), computes the variance exactly. Unfortunately this expression is quite involved, and it is difficult to extract a good estimate for the size of the variance. This meant that most of the early CLTs proved in this area contained a growth condition that was more or less impossible to check. Subsequently Slud ('91) proved that if the covariance function and its second derivative are square integrable, then the variance grows linearly with the length of the interval. We will propose an approximate formula for a general process, that computes the asymptotic growth of the variance. In particular we show that the variance always grows at least linearly for a non-trivial process, as well as recovering Slud's result. Work in progress with Eran Assaf and Naomi Feldheim.

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