

Department of Mathematics, BGU

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## Colloquium

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*On Tuesday, January 2, 2018*

*At 14:30 – 15:30*

*In Math 101-*

Naomi Feldheim (Weizmann Institute)

will talk about

### **Gaussian stationary processes: a spectral perspective**

Abstract: A Gaussian stationary process is a random function  $f: \mathbb{R} \rightarrow \mathbb{R}$  or  $f: \mathbb{C} \rightarrow \mathbb{C}$ , whose distribution is invariant under real shifts, and whose evaluation at any finite number of points is a centered Gaussian random vector. The mathematical study of these random functions goes back at least 75 years, with pioneering works by Kac, Rice and Wiener. Nonetheless, many basic questions about them, such as the fluctuations of their number of zeroes, or the probability of having no zeroes in a large region, remained unanswered for many years.

In this talk, we will give an introduction to Gaussian stationary processes, and describe how a spectral perspective combined with tools from harmonic, real and complex analysis, yields new results about such long-lasting questions.