



THE UNIVERSITY OF  
CHICAGO

Department of Statistics  
STATISTICS COLLOQUIUM

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Gaussian Tail Inflation

MONDAY, November 27, 2017 at 4:30 PM  
Eckhart 133, 5734 S. University Avenue  
*Refreshments before the seminar at 4:00PM in Jones 111*

#### ABSTRACT

Sparsity is defined as a limiting property of a family of probability distributions. It is characterized by a rate parameter and an exceedance measure, which may be finite or infinite. Many sparse integrals, including the signal-plus-noise convolution, are shown to depend on the signal distribution only through its rate parameter and exceedance measure. For statistical purposes, two sparse families having the same, or proportional, exceedance measures are equivalent to first order. Relative to the standard Gaussian distribution, the signal-plus-noise convolution is subject to tail inflation, the nature and extent of which is determined by the exceedance measure and the sparsity rate. The relationship between the tail-inflation factor and the exceedance measure is given explicitly for the inverse-square measure by the convolution-mixture theorem, which expresses the signal-noise convolution as a specific two-component mixture.

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