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Inferring the source of diffusive sources through extreme statistics.

Title: Inferring the source of diffusive sources through extreme statistics.

Abstract: A common inverse problem is to recover the source of diffusing molecules from noisy arrivals to small reactive sites. In this talk I will present a perspective on this important problem via extreme statistics. The central premise is that when a single stochastic process exhibits large variability (unreliable), the extrema of multiple processes has a remarkably tight distribution (reliable). In this talk I will present some background on extreme statistics followed by specific applications to directional sensing - the process of acquiring the direction of diffusive sources. We find that extreme statistics provide new insights and corroborate real world observations.