

1067-94-1311 **Somantika Datta*** (sdatta@uidaho.edu), Department of Mathematics, Brink Hall Room 300, Moscow, ID 83844-1103. *Construction of zero autocorrelation stochastic waveforms*. Preliminary report.

Designing unimodular sequences with an impulse-like autocorrelation is central in the general area of waveform design, and it is particularly relevant in several applications in the areas of radar and communications.

We first construct discrete infinite sequences from certain random variables such that the expected autocorrelations of the sequences have spike like behavior. By using Brownian motion this approach is then extended to the construction of continuous functions, instead of sequences, with similar behavior of the expected autocorrelation. The stochastic and non-repetitive nature of the waveforms means that they cannot be intercepted or detected by an adversary. However to be effective, the variance of the autocorrelation also needs to be small. This is part of the ongoing assessment. (Received September 20, 2010)