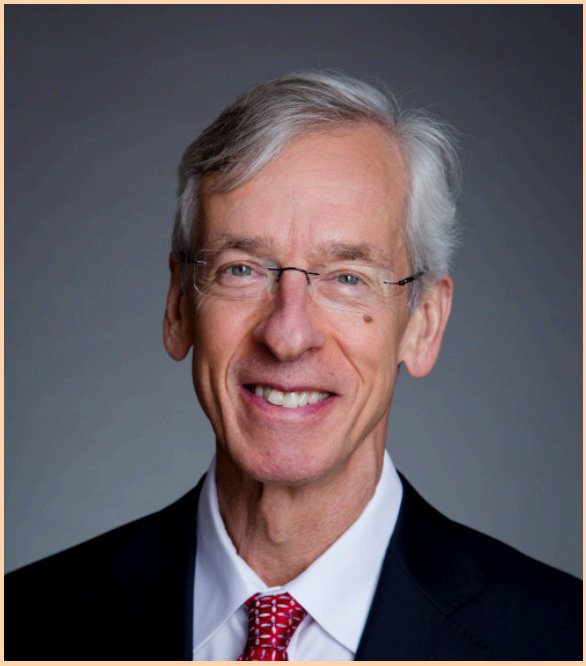
SIGNAL FRAGMENTATION FOR LOW FREQUENCY RADIO TRANSMISSION

Class of '27 lecture II, March 6, 2018,4-5pm@AE 214

Professor Russel Caflisch



Professor/Director, Courant Institute, New York University

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Invited speaker, SIAM National Meeting, International Congress of Mathematics.

Signal fragmentation is a method for transmitting a low frequency signal over a collection of small antennas through a modal expansion (similar to one level of a wavelet expansion), in which the mode has compact support in time. We analyze the spectral leakage and optimality of signal fragmentation. For a special choice of mode, the spectral leakage can be eliminated for sinusoidal signals and minimized for bandlimited or AM signals. We derive the optimal mode for either support size or for energy efficiency. The derivation of these results uses the Poisson summation formula and the Shannon Interpolation Formula.

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