

**Department of Applied Mathematics and Statistics
The Johns Hopkins University**

SEMINAR

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February 16, 2006
304 Whitehead Hall
Refreshments: 3:30 p.m.
Seminar: 4:00 p.m.

OPTIMAL FLUCTUATION METHOD FOR ERROR CORRECTION

ABSTRACT

One of the main obstacles to the wider use of the so-called codes on graphs is that, due to the complex behavior of their decoding algorithms, no systematic method which would allow characterization of the error probability is known. This is especially true at the weak noise where many systems operate and where coding performance is difficult to estimate because of the diminishingly small number of errors. We show how the “optimal fluctuation” method of applied mathematics allows one to solve the problem of error probability analysis in the weak noise range by recasting it as a computationally tractable minimization problem. We discuss utility of this powerful method of statistical analysis for future research in computer and information sciences.