

1035-Z1-93

Matthew Linn* (linnm@umich.edu), 439 West Hall, 1085 S. University, Ann Arbor, MI 48109.

Nonlinear filtering of random fields in the presence of long-memory noise.

This work is devoted to the development of spatial non-linear filtering theory in the case when the observation noise lacks a semimartingale structure and has long memory. In the model with observation given by persistent fractional Brownian sheet and a signal given by a family of Markov processes in the plane, we present a stochastic evolutionary equation satisfied by the optimal (two-parameter) nonlinear filter. Unlike the classical case, the latter equation fails to be a "proper" stochastic partial differential equation due to the effects of long-memory in the observation noise. There are several approximations to the optimal filter obtained by multiple integral expansions. (Received July 22, 2007)