RECENT RESULTS IN NON-LINEAR FILTERING[1]

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Consider the following observation process

(1) $\quad y_t = \int_0^t x_s ds + w_t$,

where w_t is standard Brownian motion and the signal process x_s satisfies

(H1) $\quad \alpha > 0$ st. $E \exp (\alpha \int_0^1 s_s^2 ds) < \alpha$.

(H2) x_t and w_t are independent

Let

(2) $\quad \nu_t = y_t - \int_0^t E(x_s | F_s^y) ds$ be the innovations

process.

We announce in this paper that under hypotheses (H1), (H2) the innovations conjecture of Frost-Kailath is true. This extends earlier results of J.M.C. Clark. The proof uses ideas of Yamade and Watanabe on the existence of strong solutions of differential equations [1].

References

[1] D.W. Stroock and S.R.S. Varadhan : Multi-dimensional Diffusion Processes, Springer-Verlag, Berlin-New York, 1979.