RECENT RESULTS IN NON-LINEAR FILTERING\(^{(1)}\)

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Consider the following observation process

\[ y_t = \int_0^t x_s \, ds + w_t \]

where \( w_t \) is standard Brownian motion and the signal process \( x_t \) satisfies

\[ (H1) \quad \alpha > 0 \text{ st. } E \exp \left( \alpha \int_0^t s \, ds \right) < \alpha. \]

\[ (H2) \quad x_t \text{ and } w_t \text{ are independent} \]

Let

\[ v_t = y_t - \int_0^t E(x_s | F_s) \, ds \]

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. Clarke. The proof uses ideas of Yamada and Watanabe on the existence of strong solutions of differential equations \((1)\).

References


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