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**Riccati equation of stochastic control and stochastic uniform observability in infinite dimensions.** (English) [Zbl 1071.93014](#)

Barbu, Viorel (ed.) et al., Analysis and optimization of differential systems. IFIP TC7/WG 7.2 international working conference, Constanta, Romania, September 10–14, 2002. Boston, MA: Kluwer Academic Publishers (ISBN 1-4020-7439-5/hbk). 421-432 (2003).

Let  $(w_1, \dots, w_m)$  be a standard Wiener process. Consider the control problem with quadratic optimality criterion for

$$dx(t) = [A(t)x(t) + B(t)u(t)] dt + \sum_{i=1}^m G_i(t)x(t) dw_i(t),$$

$u$  being the the control process. Under suitable stabilizability and observability conditions the corresponding RIM equation has a unique bounded, uniformly positive solution. It is shown by a counterexample that in contrast to the deterministic case uniform controllability does not imply stabilizability.

For the entire collection see [\[Zbl 1012.00037\]](#).

Reviewer: [H. Hering \(Göttingen\)](#)

**MSC:**

[93B28](#) Operator-theoretic methods  
[93B05](#) Controllability  
[93B07](#) Observability

Cited in **1** Review  
Cited in **2** Documents

**Keywords:**

stochastic quadratic control; Riccati equation; stochastic uniform observability; stabilizability; detectability; uniform controllability