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**Ruin theory in a hidden Markov-modulated risk model.** (English) Zbl 1237.91127  
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Summary: We discuss ruin theory when the insurance risk process is described by a hidden Markov, regime-switching diffusion process. The innovations approach to filtering theory is used to transform the partially observed modeling framework into one with complete observations. (Robust) filters for the hidden states of the chain are given. A partial differential equation for the ruin probability is derived in the “filtered” model.

**MSC:**

- 91B30 Risk theory, insurance (MSC2010)
- 93E11 Filtering in stochastic control theory
- 60J20 Applications of Markov chains and discrete-time Markov processes on general state spaces (social mobility, learning theory, industrial processes, etc.)

Cited in 5 Documents

**Keywords:**

Dirichlet problem; filtering; hidden Markovian regime-switching model; innovations approach; partial differential equation; ruin probability

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