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**Ruin probability via quantum mechanics approach.** (English) Zbl 1401.91197  
*Insur. Math. Econ.* 79, 69-74 (2018).

Summary: The finite time ruin probability in the classical surplus process setup with additional capital injections and withdrawals is investigated via the quantum mechanics approach. The results are compared with the Picard-Lefevre Appell polynomial approach and the traditional Markov chain approach. In addition, several optimization problems in the insurance market are numerically solved by applying the quantum mechanics approach.

**MSC:**

91B30 Risk theory, insurance (MSC2010)

91B80 Applications of statistical and quantum mechanics to economics (economics)

91G60 Numerical methods (including Monte Carlo methods)

65C99 Probabilistic methods, stochastic differential equations

Cited in 2 Documents

**Keywords:**

ruin probability; Hamiltonian; path integral; quantum mechanics; capital injection; Appell polynomials

**Full Text:** [DOI](#)

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