

## Quantum Mechanics Approach for Ruin Probability

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**Abstract :** Incoming cash flows and outgoing claims play an important role to determine how is companies' profit or loss. In this matter, ruin probability provides to describe vulnerability of the companies against ruin. Quantum mechanism is one of the significant approaches to model ruin probability as stochastically. Using the Hamiltonian method, we have performed formalisation of quantum mechanics  $\langle x|e^{-tH}|x' \rangle$  and obtained the transition probability of 2x2 and 3x3 matrix as traditional and eigenvector basis where A is a ruin operator and  $H|x' \rangle$  is a Schroedinger equation. This operator A and Schroedinger equation are defined by a Hamiltonian matrix H. As a result, probability of not to be in ruin can be simulated and calculated as stochastically.

**Keywords :** ruin probability, quantum mechanics, Hamiltonian technique, operator approach

**Conference Title :** ICCMSA 2016 : International Conference on Computational Modeling, Simulation and Analysis

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** August 04-05, 2016