

FUNCTIONAL LARGE DEVIATIONS AND MODERATE DEVIATIONS FOR MARKOV MODULATED RISK MODELS WITH REINSURANCE

Fuqing GAO, *Wuhan University, Wuhan*. E-mail: fkgao@whu.edu.cn
Jun YAN, *Wuhan University, Wuhan*

KEY WORDS: Markov modulated risk model, large deviations, moderate deviations, Lundberg's estimate

MATHEMATICAL SUBJECT CLASSIFICATION: 60F10, 60G55, 60J27

Abstract: The functional large deviation principle and the functional moderate deviation principle for the Markov modulated risk model with reinsurance are established by exponential martingale approach. An estimate of the ruin probability with finite horizon is also obtained.

References

- [1] F. Q. Gao (1995), Small Perturbation Cramer methods and moderate deviations for Markov processes, *Acta Mathematica Scientia*, **15**, 394–405.
- [2] S. W. He, J. G. Wang & J. A. Yan (1992). *Semimartingale Theory and Stochastic Calculus*, Science Press & CRC Press Inc., Beijing & Boca Raton.
- [3] C. Macci, G. Stabile (2006), Large deviations for risk processes with reinsurance. *Journal of Applied Probability*, **43**, 713–728.
- [4] H. Pham (2007), Some applications and methods of large deviations in finance and insurance, Paris-Princeton Lectures on Mathematical Finance.
- [5] L. M. Wu (1995), Moderate deviations of dependent random variables related to CLT, *Ann. Probab.* **23**, 420–445.