

For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar

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Laboratoire de Mathématiques
Equipe de Probabilités Statistiques
Université de Franche Comté

will give a talk

entitled

**HIGH ORDER EXPANSIONS FOR RENEWAL FUNCTIONS,
AND APPLICATIONS TO RISK THEORY**

Abstract

Let $(X_k)_{k \in \mathbb{N}}$ be an i.i.d. sequence of non negative random variables with common cumulative distribution F . We consider the associated renewal function

$$U(x) := \sum_{n=1}^{\infty} F^{*(n)}(x), \quad x \geq 0.$$

It is known (see for example Feller (1956)) that if X_1 has a second moment then one has the following expansion

$$U(x) = \frac{x}{\mu} + \frac{\mu_2}{2\mu^2} + o(1) \quad \text{as } x \rightarrow \infty, \quad (0.1)$$

with $\mu = \mathbb{E}(X_1)$ and $\mu_2 = \mathbb{E}(X_1^2)$ the first and second moment respectively. Our aim of this talk is two fold. First, we provide additional terms in the $o(1)$ term in (0.1) when the X_k 's are light tailed, using mainly an approach by Stone (1965) that uses complex analysis. Then, we apply this result to risk theory and provide expansions of ruin probabilities in continuous and discrete time as initial reserves tend to infinity. As a side result, a two term expansion is also given for the ruin probability of a two dimensional risk process.

on

Wednesday, October 28, 2015

(Refreshments will be served from 2:00 p.m. outside Room 301 Run Run Shaw Building)

2:15 p.m. – 3:15 p.m.

at

Room 301, Run Run Shaw Building

Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 3917 2466 for parking arrangement.

All interested are welcome