

**Generalized Power Series Poisson Process and Its Applications in  
Risk Modeling and Analysis**

**K. K. Jose<sup>1</sup> and Shalitha Jacob<sup>2</sup>**

<sup>1</sup>**School of Mathematics and Statistics, Mahatma Gandhi University, Kottayam**

<sup>2</sup>**Marthoma College for Women, Perumbavoor**

Contact email: [kkj.smsda.mgu@gmail.com](mailto:kkj.smsda.mgu@gmail.com), [kkjstc@gmail.com](mailto:kkjstc@gmail.com)

**Abstract**

In this talk , we review the recent developments in risk modeling and introduce a new model called Generalized Power Series Poisson Process as a compound Poisson Process with Generalized Power Series distribution as the compounding distribution. We develop a risk model with Generalized Power Series Poisson Process as a count model. The joint distribution of the time to ruin and deficit, at the time of ruin are also obtained. As special cases, we consider Binomial Poisson Process, Poisson Poisson Process, Negative Binomial Poisson process, Logarithmic Poisson Process etc. and apply these in risk modeling and analysis. We obtain expressions for the p.m.f., Value at Risk (VaR) and Tail Value at Risk (TVaR) and discuss the properties. In special we consider the case of exponentially distributed claims. We obtain the distribution of aggregate claims and gain(loss) and stop loss premium. These can be applied in option pricing, stock market investments, insurance etc.

--