

Statistics Seminar  
Department of Mathematical Sciences

<b>DATE:</b>	Thursday, November 13, 2014
<b>TIME:</b>	1:15pm to 2:15pm
<b>PLACE:</b>	OW 100E
<b>SPEAKER:</b>	Withanage A. De Mel (Binghamton University)
<b>TITLE:</b>	Chi-Squared Goodness of Fit Test Based on Random Cells with Recurrent Event Data

**Abstract**

We consider a recurrent event wherein the inter-event time distribution  $F$  is assumed to belong to some parametric family of the distributions  $\mathcal{F}$ , where the unknown parameter  $\theta$  is  $q$ -dimensional. This work deals with the problem of goodness-of-fit test for  $F$ . We develop a chi-square type test where the  $k$  nonoverlapping cell boundaries are randomly chosen. Our test used a Kaplan Meier type nonparametric maximum likelihood estimator (NPMLE) of  $F$  to obtain the observed frequencies. The minimum distance estimator of  $\theta$  is obtained by minimizing the quadratic form that resulted from the properly scaled vector of differences between the observed and expected cell frequencies. The proposed chi-square test statistic is constructed by using the NPMLE of  $F$  and the minimum distance estimator. We show that the proposed test statistic is asymptotically chi-square with  $k - q - 1$  degrees of freedom. Results for specific families of distributions such as Weibull and Exponential are presented. We also discuss results of a simulation study as well as application to a biomedical data set.

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