# Statistics Seminar

Department of Mathematical Sciences

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| **DATE:** | Thursday, November 13, 2014 |
| **TIME:** | 1:15pm to 2:15pm |
| **PLACE:** | OW 100E |
| **SPEAKER:** | Withanage A. De Mel (Binghamton University) |
| **TITLE:** | 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.