# Statistics Seminar

Department of Mathematical Sciences

| | |
|---|---|
| **DATE:** | Thursday, May 3, 2018 |
| **TIME:** | 1:00pm – 2:15pm |
| **LOCATION:** | WH 100E |
| **SPEAKER:** | Junyi Dong, Binghamton University |
| **TITLE:** | Marginal Distribution Method |


**Abstract**

Let Z be the covariate vector and Y be the response variable with the joint cumulative distribution function F. Given a random sample from F, in order to analyze the data based on a certain proportional hazards (PH) model, one needs to test the null hypothesis Ho: F belongs to the Ph model first. The existing tests to achieve this task make use of the residuals and are invalid in certain situations, such as when $F$ is not from any PH model. To overcome this disadvantage, we propose a valid model checking test of Ho. It is based on the weighted average of the difference between two estimators of the marginal distribution of the response variable: its non-parametric maximum likelihood estimator and its estimator under the PH model. This test is called the marginal distribution (MD) test. We give the theoretical justification of the MD test. The simulation study suggests that the MD test is always consistent, whereas the existing tests may be invalid and they are often unlikely to reject the wrong PH model assumption when they are not valid.