Abstract: One-shot devices are products that can only be used once. Typical one-shot devices include air-bags, fire-extinguishers, fireworks etc. The observations from those devices are either success and failure at the time of test/use. So, there is usually a considerable loss of information, and hence, the estimation of life characteristics becomes a difficult problem. In this case, the estimation problem has been discussed by many authors, mostly in a parametric setting. In this talk, we will focus on the following aspects of one-shot devices test data. First, we will discuss the Bayesian estimation and a semi-parametric estimation method for simple one-shot devices. Since most one-shot devices contain many components and that failure of any one of them may lead to the device’s failure, a competing risk model will be discussed next in a one-shot device testing context. The second section will discuss the maximum likelihood estimation of model parameters using the EM algorithm, the Bayesian estimation, and the semi-parametric estimation for such a competing risk scenario. Finally, we will conclude the presentation by mentioning some open problems.

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