

**CONTINUOUS AND DISCRETE TIME EXTREMES:
SOME THEORETICAL AND PRACTICAL ASPECTS**

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In many applications, the primary interest is the supremum of some continuous time process over a specified period. However, data are usually available over a discrete set of times and the inference can only be made for the maximum of the discrete version of the process over this discrete set of times. The true continuous time maximum will be larger than the maximum of the discrete skeleton and if we want to estimate the extremes of the continuous time process based on the discrete time data, we need to make an adjustment to allow for the effect of discrete sampling and provide a measure of how much smaller it tends to be. Thus, we look at the joint asymptotic distribution of the maxima of continuous processes and their discrete versions sampled at different frequencies. This joint distribution will have basically 3 different forms depending on the sampling frequency. We also look at simple statistical models which relate the continuous maximum to the discrete maxima observed over different frequencies.