

**University of California, Irvine
Statistics Seminar**

***New Classes of Priors Based on Stochastic Orders:
Theory and Applications in Reliability***

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**4 p.m., Thursday, April 16, 2020
Join via Zoom: <https://uci.zoom.us/j/700695554>
Meeting ID: 700 695 554**

**Join via Skype for Business:
<https://uci.zoom.us/skype/700695554>**

In the context of robust Bayesian analysis, we first introduce a new class of univariate prior distributions based on stochastic orders and distortion functions. Then we introduce a new class of multivariate priors based on stochastic orders, multivariate total positivity of order 2 (MTP2) and weighted distributions. We provide the new definitions, their interpretation and the main properties and we also study the relationship with other classical classes of prior beliefs. We also consider metrics (Kolmogorov and Kantorovich in the former case, Hellinger and Kullback-Leibler in the latter) to measure the uncertainty induced by such classes. Finally, we present the application of the former class in the context of fault tree analysis for a spacecraft re-entry example, whereas the latter will be illustrated with an example about train door reliability.