Chris Jones

Some parametric families of distributions; connections, comparisons and extensions

Univariate continuous distributions are one of the fundamental components on which statistical modelling, ancient and modern, frequentist and Bayesian, multidimensional and complex, is based. In this talk, I will review and compare some of the main general techniques for providing families of typically unimodal distributions on R with one or two, or possibly even three, shape parameters, controlling skewness and/or tailweight, in addition to their all-important location and scale parameters. One important and useful family is comprised of the skew-symmetric distributions brought to prominence by Azzalini. As these are widely covered in the literature, I focus more on their complements and competitors. Principal amongst these are distributions formed by transforming random variables, by what I call transformation of scale, including two-piece distributions, and by probability integral transformation of non-uniform random variables.

I also hope to discuss briefly one or more extensions, to the multivariate case, to distributions on the circle and/or to distributions for survival and reliability data.