An overview of SAS distributions and their properties

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As participants at this conference will no doubt be aware, Adelchi's paper "A class of distributions which includes the normal ones" (Scand. J. Statist., 1985) sparked huge renewed interest into models for asymmetrically distributed data. Rather than focusing on a perturbation-based approach, this talk provides an overview of a method of generating skew models from symmetric ones based on sinh-arcsinh (SAS) transformation. The main properties of SAS models obtained by transforming standard normal and standard t random variables are outlined, and their relationships with previously existing models identified. The related issues of: (i) skewness-invariant measures of kurtosis; (ii) the scaling of base random variables prior to SAS transformation so as to obtain appealing asymmetric models; (iii) goodness-of-fit testing, are also considered.