

INFERENCE FOR A FAMILY OF STATISTICAL DISTRIBUTIONS WITH HEAVY TAILS

by

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We introduce a family of leptokurtic symmetric distributions represented by the difference of two gamma variates. Properties of this family are discussed. The Laplace, sums of Laplace and normal distributions all arise as special cases of this family. We propose a two-step method for fitting data to this family. First, we perform a test of symmetry, and second, we estimate the parameters by minimizing the quadratic distance between the real parts of the empirical and theoretical characteristic functions. The quadratic distance estimator obtained is consistent, robust and asymptotically normally distributed. We develop a statistical test for goodness-of-fit and introduce a test of normality of the data. A simulation study is provided to illustrate the theory.