

ABSTRACT

I will present account of recent results on non-Gaussian stochastic models involving the generalized Laplace distribution. The focus will be on moving average processes driven by Laplace motion.

As oppose to models based on the Gaussian distribution, these ones account explicitly for transients (highly localized sudden changes), asymmetries, and heavy tails.

The model is characterized by a low number of parameters accounting for fundamental characteristics of multivariate signals: the covariance matrix representing size of the signals and their mutual dependence, the excess kurtosis that in the model is related to relative size of transients, and the time scale. After a review of general theory on the distribution and stochastic models involving non-Gaussian second order noise, the account of recent research on estimation and effective simulation will be given. The presentation will conclude with an application to modeling multivariate road and vehicle data.