

# LAPLACE DISTRIBUTIONS AS CONJUGATE FAMILIES

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## Abstract

In ref. [1] is introduced the notion statistically dual distributions and is shown that several pairs of distributions (Poisson and Gamma, normal and normal, Cauchy and Cauchy) are statistically dual distributions. These distributions allow to exchange the parameter and the random variable, conserving the same formula for the distribution of probabilities. The interrelation between the statistically dual distributions and conjugate families is considered in ref. [2]. It allows to use the statistical duality for estimation of the distribution parameter. In the report we show that Laplace distributions are statistically dual distributions and, correspondingly, can belong to conjugate families. The Monte Carlo experiment confirms this supposition.

## References:

- [1] S.I. Bityukov et al. e-Print: math.ST/0411462; S.I. Bityukov et al. Proc. of Conf. PhyStat'05, <http://www.physics.ox.ac.uk/phystat05/proceedings/>
- [2] S.I. Bityukov et al., AIP Conf.Proc. 803 (2005) 398-402

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