MATHEMATICAL INEQUALITIES FOR BIPARAMETRIC EXTENDED INFORMATION MEASURES

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Abstract. In this paper we introduce quasilinear-type divergences defined by the two-parameter generalization of the logarithm. Jeffreys and Jensen-Shannon divergence are also extended to biparametric forms.

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REFERENCES

[1] J. M. ALDAZ, *A stability version of Hölder's inequality*, J. Math. Anal. Appl. **343**, 2 (2008), 842–852.

[2] S. ARIMOTO, *Information-theoretic considerations on estimation problems*, Information and Control **19** (1971), 181–190.

[3] E. BOEKEE AND J. C. A. VAN DER LUBBE, *The R-norm Information Measure*, Information and Control **45** (1980), 136–155.

[4] S. S. DRAGOMIR, J. ŠUNDE AND C. BUŞE, *New inequalities for Jeffreys divergence measure*, Tamsui Oxf. J. Math. Sci. **16** (2000), 295–309.

[5] S. S. DRAGOMIR, *Bounds for the normalized Jensen functional*, Bull. Austral. Math. Soc. **74**, 3 (2006), 417–478.

[6] A. IBRAHIM, S. S. DRAGOMIR, M. DARUS, *Power series inequalities related to Young's inequality and applications*, Online: `http://rgmia.org/papers/v15/v15a52.pdf`

[7] S. FURUICHI, *On refined Young inequalities and reverse inequalities*, J. Math. Ineq. **5** (2011), 21–31.

[8] S. FURUICHI, N. MINCULETE AND F.-C. MITROI, *Some inequalities on generalized entropies*, arXiv:1104.0360v1. To appear at J. Inequal. Appl.

[9] S. FURUICHI, F.-C. MITROI, *Mathematical inequalities for some divergences*, Physica A **391** (2012), 388–400. DOI:10.1016/j.physa.2011.07.052

[10] H. JEFFREYS, *An invariant form for the prior probability in estimation problems*, Proc. Roy. Soc. Lon., Ser. A **186** (1946), 453–461.

[11] V. SCHWÄMMLE AND C. TSALLIS, *Two-parameter generalization of the logarithm and exponential functions and Boltzmann-Gibbs-Shannon entropy*, J. Math. Phys. **48** (2007), 113301.

[12] C. TSALLIS, *Possible generalization of Boltzmann-Gibbs statistics*, J.Stat. Phys. **52** (1988), 479–487.

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