

AN INVOLUTION INEQUALITY FOR THE KULLBACK—LEIBLER DIVERGENCE

IOSIF PINELIS

Abstract. Let $R_t := tP + (1-t)Pt$, where $t \in (0, 1)$, P is a probability measure, and Pt is the push-forward image of P under a measurable involution t . An inequality involving the Kullback–Leibler divergence of R_t from P is given. It is shown that the role of the involution is essential.

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REFERENCES

- [1] *An inequality of KL divergence*, 2015, MathOverflow, <http://mathoverflow.net/questions/222482/an-inequality-of-kl-divergence/222560#222560>.
- [2] S. KULLBACK AND R. A. LEIBLER *On information and sufficiency*, Ann. Math. Statistics, **22**: 79–86, 1951.