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Nonparametric Bayes methods for directional data. (English) Zbl 0809.62046

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Summary: A model for directional data in q dimensions is studied. The data are assumed to arise from a distribution with a density on a sphere of $q-1$ dimensions. The density is unimodal and rotationally symmetric, but otherwise of unknown form. The posterior distribution of the unknown mode (mean direction) is derived, and small-sample posterior inference is discussed. The posterior mean of the density is also given. A numerical method for evaluating posterior quantities based on sampling a Markov chain is introduced. This method is generally applicable to problems involving unknown monotone functions.

MSC:

62H11 Directional data; spatial statistics
62C10 Bayesian problems; characterization of Bayes procedures
62G05 Nonparametric estimation
62F15 Bayesian inference

Cited in **3** Documents

Keywords:

spherical statistics; rotationally symmetric density; unimodal density; mean direction; directional data; posterior distribution; small-sample posterior inference; posterior mean; Markov chain; unknown monotone functions

Full Text: DOI

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