## ON THE POSTERIOR MEDIAN ESTIMATORS OF POSSIBLY SPARSE SEQUENCES

NATALIA BOCHKINA $^1$  and Theofanis Sapatinas $^2$ 

 <sup>1</sup>Department of Epidemiology and Public Health, Imperial College, Norfolk Place, London W2 1PG, U.K.
<sup>2</sup>Department of Mathematics and Statistics, University of Cyprus, P.O. Box 20537, Nicosia CY 1678, Cyprus

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**Abstract.** We adopt the Bayesian paradigm and discuss certain properties of posterior median estimators of possibly sparse sequences. The prior distribution considered is a mixture of an atom of probability at zero and a symmetric unimodal distribution, and the noise distribution is taken as another symmetric unimodal distribution. We derive an explicit form of the corresponding posterior median and show that it is an antisymmetric function and, under some conditions, a shrinkage and a thresholding rule. Furthermore we show that, as long as the tails of the nonzero part of the prior distribution are heavier than the tails of the noise distribution, the posterior median, under some constraints on the involved parameters, has the bounded shrinkage property, extending thus recent results to larger families of prior and noise distributions. Expressions of posterior distributions and posterior medians in particular cases of interest are obtained. The asymptotes of the derived posterior medians, which provide valuable information of how the corresponding estimators treat large coefficients, are also given. These results could be particularly useful for studying frequentist optimality properties and developing statistical techniques of the resulting posterior median estimators of possibly sparse sequences for a wider set of prior and noise distributions.

Key words and phrases: Bayes model, sparse sequences, wavelets.