

# Classifying ships by their acoustic signals with a cross-bispectrum algorithm and a radial basis function neural network (PDF)

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Title: Classifying ships by their acoustic signals with a cross-bispectrum algorithm and a radial basis function neural network

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关键词: [acoustic vector signal](#); [cross-bispectrum](#); [feature extraction](#); [RBFNN](#); [ship classification](#)

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摘要: An algorithm for estimating the cross-bispectrum of an acoustic vector signal was formulated. Composed features of sound pressure and acoustic vector signals are extracted by the proposed algorithm and other estimating algorithms for secondary and higher order spectra. Its effectiveness was tested with lake and sea trial data. These features can be used to construct an input vector set for a radial basis function neural network. The classification of vessels can then be made based on the extracted features. It was shown that the composed features of acoustic vector signals are more easily divided into categories than those of pressure signals. When using the composed features of acoustic vector signals, the recognition rate of underwater acoustic targets improves.

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备注/Memo: -

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