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Automatic algorithm for inverse synthetic aperture radar images recognition and classification

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Abstract

The authors propose an algorithm for automatic aircraft categories that is models classification from inverse synthetic aperture radar (ISAR) images that use pulse reflection shape and Doppler shifts of parts of aircraft that are in any maneuver that introduces rotation to the target. The authors artificially generated five different categories of ISAR aircraft using computer simulations and tested these simulated ISAR aircraft images of the airplanes defined by size and shape that are flying in a prescribed holding pattern. The authors investigate in what parts of the holding pattern the ISAR reflections provide information that makes it possible to identify to which of the five categories an aircraft in the holding pattern belongs. The obtained results show that it is possible in most parts of the holding pattern to successfully classify the various aircraft targets. © The Institution of Engineering and Technology 2010.

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