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Simulation of Chaff Cloud Signature

Authors: Richard P. Fray; AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF ENGINEERING

Abstract: In this thesis time-varying radar cross sections of **chaff** clouds are generated for use in radar/ECM computer simulations, under the assumption that scattering from **chaff** clouds is a wide sense stationary random process. For a jointly gaussian random process, second order statistics are developed from correlated samples of radar cross sections. Applicable statistical tests are performed to validate a set of generated samples. The goodness of fit of the samples compared to the prespecified density function is determined along with a comparison of the correlation coefficients from the generated set to the desired correlation coefficients. Rayleigh and Weibull statistics are also derived from gaussian variables to present an alternative way of describing the probability distributions of **chaff** cloud cross sections. Topics for further study are suggested. Keywords: **Chaff** simulation, Correlation techniques, Electronic countermeasures, Radar confusion reflectors, and Radar cross sections.

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