

An update on the extended advanced IEM for scattering from randomly rough surfaces

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In this study we update the extended advanced integral equation model (EAIEM) for electromagnetic backscattering and bistatic scattering from rough surfaces with small to moderate heights. We extend the first order approximation of the error function as introduced in the EAIEM model to the second order, in the hope to be more suitable for large roughness and high frequency. In addition, a new transition model for the reflection coefficient is proposed to make the dependencies explicit on the average surface curvature, incident frequency, and dielectric constant, whereas making no use of the complementary term, so the effect of inadequate evaluation of this term is mitigated. Comparison with POLARSCAT data for backscattering and with EMSL measurements for bistatic scattering demonstrates the validity of the updated model.

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