

Forward scattering of a radar beam from a rough sea surface is modeled using the Generalized Forward-Backward (GFB) method and physical optics in a set of Monte Carlo simulations. Measurements were performed using a scaled ocean model in the NSW Carderock Maneuvering and Sea-Keeping (MASK) wavetank facility. The mean, standard deviation and probability density function (PDF) of the computational and experimental data is compared and good agreement is found. It is verified that microwave communication over a rough sea surface is through a Gaussian channel. Backscattering from a floating target on the rough sea surface is also investigated. It is found that, for low-grazing angles of incidence, the rolling and bobbing motion of the floating target has a more significant impact on the radar cross section than the distortion of the electromagnetic fields caused by the rough sea surface.