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Simulation of the Reflected Signal of an Oceanographic Radio Altimeter

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Abstract. The solution to the problem of obtaining an estimate of the accuracy characteristics of an orbital oceanographic radio altimeter during its ground tests involves the formation of a copy of the reflected signal, which should reproduce the characteristics of the real response signal of the radio altimeter with high accuracy. Such characteristics include the delay in signal propagation from the phase center of the radio altimeter antenna to the average sea level and back, the shape of the envelope of the reflected signal corresponding to the profile of the reflecting surface (type and height of waves), the width and shape of the radiation pattern of the radio altimeter antenna and the associated area of the irradiated surface. To ensure the required characteristics of the reflected signal when forming it in real time, it is important to choose a signal model that, on the one hand, can be implemented on available computing tools, and on the other hand, ensure the imitation of the geodetic characteristics measured by the radio altimeter with an accuracy that allows estimating its instrumental error. The article presents comparative results of the formation of a convolution signal using the Brown model and the facet model.
Keywords: Radio altimeter, ground testing, echo simulator, convolution signal, Brown model, facet model
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