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CLEARANCE ACCURACY ANALYSIS AND METHOD RESEARCH BASED ON MULTI-CLOSED-LOOP TRUSS ANTENNA UNIT

Abstract

There are a variety of truss elements in large deployable antennas, and the randomness of clearance has a great influence on the structural accuracy. Due to the factors of multi-closed-loop coupling, multi-clearance and large-scale, it is very difficult to calculate its accuracy. In order to solve the above problems, an effective method adapted to multi-closed-loop and multi-clearance error transmission is proposed. Firstly, the clearance error model under equilibrium state is established. Then, the transmission path analysis of the target structure is carried out in combination with the clearance error model, and different error transmission paths are obtained. Finally, the clearance random state is simulated by Monte Carlo method, and the error probability distribution under the influence of clearance is shown. The correctness and effectiveness of the method are verified by analyzing and calculating the tetrahedral elements of the truss antenna.