Abstracts

Spiral super-quadric generatrix and bodies of two generatrices in automated parameterization of 3-D geometries

B.M. Kolundzija and A.R. Djordjevic. "Spiral super-quadric generatrix and bodies of two generatrices in automated parameterization of 3-D geometries." 1997 Transactions on Microwave Theory and Techniques 45.5 (May 1997, Part II [T-MTT]): 864-866.

Most of the methods that solve the surface integral equation (SIE) by the method of moments (MoM) use triangles and flat quadrilaterals for geometrical modeling. Many complex structures can be easily modeled by quadrilaterals combining spiral super-quadric generatrices and the concept of the body of two generatrices (BoTG). A BoTG is any body that can be obtained from two generatrices by applying a certain rule. Four simple rules for obtaining BoTG's are: (1) generalized rotation; (2) translation; (3) constant cut; and (4) connected generatrices. Spiral super-quadric generatrices enable efficient modeling of circles, arcs, ellipses, squares, rectangles, spirals, etc. Thus, a simple but fairly general algorithm for geometrical modeling is obtained, convenient for implementation in electromagnetic-field solvers.

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