

Meta Polapsee 2007: Sidelobe Reduction in Peano-Gosper Fractal Arrays using Genetic Algorithms. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Associate Professor Nuttaka Homsup, Ph.D. 65 pages.

In recent years, engineers have exploited nature-based concepts in antenna designs. The Fractal Array is a class of antenna arrays which are designed using fractal geometry (The geometric characterization of the simplest fractals is self-similarity: the shape is made of smaller copies of itself. The copies are similar to the whole: same shape but different size). The first application of fractals in the field of antenna engineering was reported by Kim and Jaggard. Broadband antenna arrays with low sidelobe levels can be possibly generated using fractal geometry. Although the strategic arrangement of antenna array elements can generate low sidelobe level, reducing sidelobe levels is a very difficult problem. The antenna arrays with low sidelobe levels can be synthesized using many analytical methods including the Chebyshev method and Taylor method. In the synthesis of multi-element antenna arrays, genetic algorithm, a global optimization and widely used technique can search through a large solution space.



Student's signature



Thesis Advisor's signature

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