Antenna Array Pattern Synthesis via Convex Optimization

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We show that a variety of antenna array pattern synthesis problems can be expressed as convex optimization problems, which can be (numerically) solved with great efficiency by recently developed interior-point methods. The synthesis problems involve arrays with arbitrary geometry and element directivity, constraints on far and near field patterns over narrow or broad frequency bandwidth, and some important robustness constraints. We show several numerical simulations for the particular problem of minimizing the sidelobe level of a simple array.

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