

# REDUCTION OF SIDELobe LEVEL IN N×N ANTENNA ARRAYS

**Ta Dinh Duc**

*Course QH-2010—I/CQ, Major Electronic and Telecommunication*

**Abstract:** Digital beamforming (DBF) is the integration between antenna technology and digital technology. It was first developed by sonar and radar communities. Nowadays applications of DBF technology are spreading quickly and soon it will appear in many wireless communication devices.

The thesis investigates the characteristics of Chebyshev beamforming algorithm to suppress the sidelobe level (SLL) on planar antenna arrays. Firstly, a single planar patch antenna has been designed and simulated to generate its radiation pattern data. A group of four of these antennas forms a 2×2 planar antenna array as the fundamental array. The array of N×N elements can be formed from the fundamental array. The array factor of the planar arrays has been calculated. The Chebyshev beamforming algorithm has been applied to this planar antenna array. The software code has been developed. As the results, the beam of this planar array can be formed with reduced sidelobe level to maximum -40 dB and the trade-off value is -20 dB and -25dB of 8×8 and 16×16 planar antenna array, respectively.

**Keyword:** Antenna Array, Chebyshev Algorithm, Adaptive Beamforming, Microstrip Antennas, Planar Antenna Array, Digital beamforming.