1009-00-70 **Rajarajeswari Devarajulu*** (`rajisethu02@yahoo.com`), Graduate Student, Electrical Engineering, UTPA, and **Jae sok Son** (`jaesok@panam.edu`), Assistant Professor, Electrical engineering, UTPA. *Orthogonal Polynomials in SAR Imaging.*

This paper discusses the use of orthogonal polynomials in SAR imaging. The truncation of Fourier series in SAR imaging causes unwanted oscillations referred to as sidelobes. These sidelobes can be reduced by smoothing functions known as windows. The window functions that derived from orthogonal polynomials have interesting sidelobe rolloff property that can be used for sidelobe reduction.

Dolph-Chebyshev is a well-known classical window constructed from Chebyshev polynomials for antenna design. Chebyshev polynomials are a special case of Gegenbauer or Ultraspherical polynomials, which are related to Jacobi polynomials. In this paper orthogonal polynomials (Jacobi, Gegenbauer and Legendre) are used to construct windows for improving the SAR image quality, and the performance of these polynomials is compared. (Received August 04, 2005)