1107-78-19 **Fan Yang*** (jackie@math.udel.edu), Department of Mathematical Sciences, University of Delaware, 15 Orchard Road, Rm 501, Newark, DE 19716, and **Peter Monk** (monk@math.udel.edu), Department of Mathematical Sciences, University of Delaware, 15 Orchard Road, Rm 501, Newark, DE 19716. *Linear Sampling Method for Shape Reconstruction in a 3D Electromagnetic Waveguide.*

In this talk we consider the Linear Sampling Method (LSM) used to recover the shape of scatterers in a 3D electromagnetic waveguide. We present mathematical results regarding the justification of the LSM for solving the inverse problem for this geometrical setting. Then we show that the LSM can be adapted to the waveguide configuration by utilizing the tools of functional analysis for Maxwell's equations, dyadic analysis for Green's functions and the factorization of the near field equation. Finally numerical results for the reconstruction of the scatterer will be given. (Received November 03, 2014)