1161-35-269 **Shyla Rae Kupis*** (skupis@g.clemson.edu), 220 Parkway Dr, Clemson University, Martin Hall M-306, Clemson, SC 29634, and **Taufiquar Khan** (taufiquar.khan@uncc.edu), 9201 University City Blvd., Fretwell 360E, Charlotte, NC 28223. *A Wavelet-Based Solution to the Electrical Impedance Tomography Inverse Problem.* Preliminary report.

Electrical impedance tomography (EIT) is a non-invasive and radiation-free method for imaging the internal electrical conductivity distribution of a body using a set of electrodes to measure voltages on the boundary. There are many applications of EIT, such as imaging malignant tumors in the medical field, damage detection of industrial concrete, and geophysical monitoring of groundwater resources. However, the downside to this imaging modality is that the EIT inverse problem is exponentially ill-posed and its solutions are highly sensitive to perturbations in the data, especially from noise. To address this inherently ill-posed inverse problem, we project the EIT minimization problem to a smaller subspace in the wavelet domain to reduce reconstruction errors and provide better reconstructed images. We solve the EIT forward problem using the complete electrode model (CEM) to account for the effect of the electrodes, and then we solve the EIT inverse problem using a modified iteratively regularized Gauss-Newton (IRGN) method in the wavelet domain. We present our findings and compare recovered solutions produced from both the original domain and wavelet domain. (Received August 18, 2020)