1154-65-1749 **Shyla Rae Kupis*** (skupis@g.clemson.edu), M-306 Martin Hall, School of Mathematical & Statistical Sciences, Clemson, SC 29634, and **Taufiquar R Khan**. *Development of a Wavelet-Based Parameter Representation to Improve Solutions to the Electrical Impedance Tomography Inverse Problem.* Preliminary report.

Electrical impedance tomography (EIT) is a method for non-invasively imaging the internal spatial distribution of an object's electrical resistivity with applications to a plethora of fields, such as medical imaging and geophysics. Since image reconstruction requires solving for the electrical conductivity distribution from an unstable or ill-posed EIT inverse problem, a wavelet-based parameter mesh is implemented to improve parameter resolvability. By reconstructing the electrical conductivity using a select few wavelet coefficients, we are able to enforce sparsity in the parameter space and, therefore, mitigate the ill-posedness of the EIT inverse problem. Lastly, the reconstructed electrical conductivity distributions with and without the use of wavelet coefficients from various synthetic examples at different noise levels are compared in terms of computational effort and accuracy. (Received September 16, 2019)