1145-35-827   **Alex Timonov*** (`atimonov@uscupstate.edu`). *A Regularisation of the Robin Problem for Functions of The Weighted Least Gradient.*

The inverse conductivity problem of Current Density Imaging is considered. It is formulated in terms of the weighted Robin least gradient problem. The problem can also be recast as the weighted 1-Laplacian subject to the Robin boundary condition. Such a model is equivalent to Complete Electrode Model. Since the boundary voltage potential is not assumed, the inverse problem does not possess uniqueness. Therefore, the problem needs to be regularised to obtain an approximate solution. The regularised weighted least gradient functionals are introduced, and their relaxation property is established. The latter is exploited as a theoretical basis for constructing the relaxation iterative algorithm. The computational effectiveness of the proposed algorithm is demonstrated in the numerical experiments. This is the joint project with Alexandru Tamasan. (Received September 15, 2018)