1145-49-1534          **Christina Knox\*** (`knox@math.ucr.edu`) and **Amir Moradifam**. *Electrical Networks with Prescribed Current.*

In this talk, we will investigate the inverse problem of recovering the conductivities of an electrical network from the knowledge of the magnitude of the current along the edges coupled with either the voltage on the boundary of the network or the current flowing in or out of the network. This problem corresponds to finding the minimizers of a $l^1$ minimization problem. Additionally, we show that while the conductivities are not determined uniquely the flow of the current is uniquely determined. We will also present a convergent numerical algorithm for solving these problems along with basic numerical simulations. Lastly, we will discuss some applications of this inverse problem. (Received September 23, 2018)