962-35-901 **Steven J Cox*** (`cox@rice.edu`), Comp. and Applied Math, MS 134, Rice University, 6100 Main Street, Houston, TX 77005, and **Lin Ji** (`jil@rpi.edu`), Dept. of Mathematical Sciences, RPI, Troy, NY 12180. *Inverse Problems for Excitable Fibers.*

The FitzHugh-Nagumo and Morris-Lecar equations are both semilinear degenerate parabolic systems that, for a class of nonlinearities, exhibit traveling waves. These nonlinearities correspond to the dynamic conductances associated with ion channels that perforate the fiber membrane. There are at present two costly and invasive means for determining the form of these nonlinearities. We here propose a third way, both cheap and noninvasive. More precisely, we show that lateral overdetermination, applying a current stimulus to one end and measuring the voltage response there while sealing the other end, suffices to uniquely determine the desired nonlinear conductance. (Received September 28, 2000)