

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Extracellular recording of *Hirudo medicinalis* neurons using high density, nanocoax neurointerface array**<sup>1</sup> JEFFREY R. NAUGHTON, MARGARET H. AASEN, MICHAEL J. BURNS, THOMAS C. CHILES, MICHAEL J. NAUGHTON, Boston College — We describe the development of a nanocoax-based neuroelectronic array with submicron pixelation with potential for recording and stimulation with high spatial and temporal resolution. Our device is composed of an array of nanoscale open-ended coaxial electrodes addressed in either a group or individual configuration. As a neuroelectronic interface, our device is characterized by noninvasive real-time coupling to the ganglion sac located along the main nerve cord of the *Hirudo medicinalis*. This allows for extracellular recording of interneural synaptic activity, while also showing the capability of actuating precisely-localized stimulation (faradaic regime). We report on initial results from measurements of electrical signals associated with induced and spontaneous synapse firing in pre- and post-synaptic somata.

<sup>1</sup>This work is partially supported by the BC Institute on Aging.

michael j. naughton  
Boston College

Date submitted: 09 Nov 2012

Electronic form version 1.4