TEMPLE UNIVERSITY
Department of Mathematics

Applied Mathematics and Scientific Computing Seminar

Room 617 Wachman Hall

Wednesday, 3 March 2010, 4:00 p.m.

Field-induced electron tunneling from atomically-sharp tips

by Vallorie J. Peridier
Temple University

Abstract.

Field-induced electron tunneling from ultra-sharp protrusions is fundamental to several disparate technologies, including field-emission microscopy, scanning-tunneling microscopy, and electron-beam lithography. By modeling the geometry of the tip/base junction as level surfaces in the prolate-spheroidal coordinate system, and using basic mathematical analysis, one can corroborate several distinctive operational behaviors that are characteristic of electron-tunneling devices.