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Spectroscopic Evidence of Discrete Energy Levels in Nanosize Clusters of Metal Atoms using a Low Temperature STM LAURA ADAMS, University of Minnesota School of Physics and Astronomy, BRIAN LANG, University of Minnesota School of Physics and Astronomy, ALLEN M. GOLDMAN, University of Minnesota School of Physics and Astronomy — A new method of obtaining spectroscopic information about clusters is realized through the interplay between the surface states at a metal-semiconductor interface and the discrete electronic energy levels of nanosize (~ 30 Å in diameter) Pb clusters. When these surface states come into registry with the energy levels of the cluster, resonant peaks emerge in the I(V) characteristics. The histograms of the peak intensities and spacings are consistent with Porter Thomas and Wigner Distributions, respectively. Metallic clusters were fabricated in situ by a buffer layer assisted growth technique developed by Huang, Chey and J. H. Weaver[1]. [1] L. Huang, S. Jay Chey, and J. H. Weaver, "Buffer-Layer-Assisted Growth of Nanocrystals: Ag-Xe-Si (111)", PRL 80, 4095 (1998).

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