

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Bismuth adsorption on Ge(001) MARIA LONGOBARDI, RENAN VILLARREAL, CHRISTOPH RENNER, Department of Condensed Matter Physics, University of Geneva, Geneva, CH-1211, Switzerland — Bismuth (Bi) is a semimetal with unique electronic properties due to its highly anisotropic Fermi surface, long Fermi wavelength and small effective electron mass. Moreover, Bi nanostructures have attracted much attention for their interesting physical properties and they are expected to exhibit quantum confinement effects resulting from the finite size. It has been reported that bismuth thin films and nanowires with diameter below 50 nm show a semimetal-semiconductor transition. In the special case of Si(001) 2x1 substrate Bi self-assembles in micrometer long almost defect free atomic nanolines (1). Here, we report a low temperature STM/STS study of the Bi adsorption on Ge(001) 2x1 substrate. The geometric and electronic structure of different Bi nanostructures are discussed as function of the bismuth coverage and the temperature of germanium substrate during Bi deposition.

(1) J. H. G. Owen, F. Bianco, S. A. Koster, D. Mazur, D. R. Bowler, and Ch. Renner, *Appl. Phys. Lett.* 97, 093102 (2010).

Maria Longobardi
Department of Condensed Matter Physics,
University of Geneva, Geneva, CH-1211, Switzerland

Date submitted: 02 Dec 2013

Electronic form version 1.4