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Low temperature scanning tunneling microscopy study on electronic standing waves and step motion on Au(111) surface HUI WANG, JONGHEE LEE, DAN SULLIVAN, Lab for Physical Sciences, Dept. of Physics, University of Maryland, MICHAEL DREYER, Lab for Physical Sciences, Dept. of Electrical And Computer Engineering, University of Maryland, BARRY BARKER, Lab for Physical Sciences, National Security Agency — We present a Low Temperature Scanning Tunneling Microscope investigation of step motion and electronic standing waves of Au(111) surface epitaxially grown on Mica. By performing Fourier Transform Scanning Tunneling Spectroscopy, we measured the parabolic surface state dispersion with an effective mass of $0.25m_e$. This agrees well with the theory and the photo-emission data. We also report the step motion of Au(111) surface at 4K. The speed of the motion is around 5 to 20nm/hr. Potential causes for this motion include tip-sample interaction and surface contamination. These and other possible causes will be discussed.

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