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**Electronic Quantum Interference in Molecular Devices** FENG MIAO, Physics Department, University of California, Riverside, CA 92507, DOUGLAS OHLBERG, R. STANLEY WILLIAMS, HP Labs, 1501 Page Mill Rd., Palo Alto, CA 94304, C.N. LAU, Physics Department, University of California, Riverside, CA 92507 — Understanding the mechanisms for electrical transport and conductance switching in molecular devices is necessary for developing molecular electronics. Here we use pressure-modulated conductance microscopy to characterize Pt/stearic acid monolayer/metal molecular heterostructures. We use either titanium or chromium as the top electrodes. By using atomic force microscope (AFM) to apply a localized force to the junction while monitoring device conductance, we observe nanoscale conductance peaks in response to applied pressure, indicating nanoscale conductance channels through the devices. Additionally, for devices with conductance of $\sim$1 to 2 conductance quantum, we also observe conductance dips and oscillations under localized pressure. The results are consistent with quantum interference of electrons between partially transmitting electrodes.

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