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**Imaging the Electronic States of a Two-Dimensional Assembled Quasicrystal** LAURA C. COLLINS, THOMAS G. WITTE, University of Notre Dame, ROCHELLE SILVERMAN, Virginia Tech, DAVID B. GREEN, KENJIRO K. GOMES, University of Notre Dame — The behavior of electrons in a periodic lattice is well understood, but how do electrons move in quasicrystals, which are ordered but aperiodic? We used scanning tunneling microscopy and atomic manipulation to assemble a quasicrystal based on the Penrose tiling and we carried out scanning tunneling spectroscopy to study its electronic properties. Carbon monoxide molecules were arranged on Cu(111) to form a potential landscape. This constrained the electrons in the two-dimensional surface states to move along the edges of a Penrose tiling. We measured the differential conductance maps to visualize the electronic density of states of the assembled quasicrystal. The statistical analysis of these maps has been used to characterize the localization of the electronic states.

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