



Im Rahmen des Physikerkolloquiums spricht

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über

Johannes Kepler and oxidic Quasicrystals: Periodic versus aperiodic Structure Formation at Surfaces

Abstract:

The discovery of a new member in the family of two-dimensional materials will be presented: 2D oxide quasicrystals, which are long-range ordered, but aperiodic [1]. Derived from periodic perovskite oxide films on a metal surface, they reveal sharp 12-fold diffraction patterns, a symmetry forbidden for periodic structures. Scanning tunneling microscopy resolves the aperiodic structure of surface atoms, arranged in squares, triangles, and rhombi. These aperiodic quasicrystals are closely related to coexisting periodic approximant structures, which share similar building blocks [2] and which have been proposed by Johannes Kepler in his famous “*harmonices mundi*” published more than 400 years ago in Linz [3].

[1] S. Förster, K. Meinel, R. Hammer, M. Trautmann, and W. Widdra, *Nature* 502, 215 (2013).

[2] S. Förster, M. Trautmann, S. Roy, W. A. Adeagbo, E. M. Zollner, R. Hammer, F. O. Schumann, K. Meinel, S. K. Nayak, K. Mohseni, W. Hergert, H. L. Meyerheim, and W. Widdra, *Phys. Rev. Lett.* 117, 095501(2016).

[3] Johannes Kepler, *Harmonices Mundi*, Linz, 1619.

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Ort: HS 8