

Why are quasicrystals quasiperiodic?

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To answer this question we have to distinguish between metallic quasicrystals and quasiperiodic self-assembled colloidal structures. In the latter case special pair potentials with two different length scales and three-body interactions seem to be the main driving factors besides entropy. In case of metallic quasicrystals, the underlying mechanism is quite different. Here, the packing of low-energy clusters with non-crystallographic symmetry seems to be the decisive factor. The way of overlapping of these clusters and some other factors lead to a much higher structural order than in the case of soft quasicrystals. The focus of the talk will be on the ordering principles of metallic quasicrystals.