p-Adic non-commutative torus

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Abstract

The most basic example of a non-commutative space is the non-commutative torus.

Construction of the C^*-algebra, which is a natural analogue of the noncommutative torus in the p-adic setting, is proposed.

The p-adic noncommutative torus properties are investigated, and some possible applications are discussed, including in the theory of the quantum Hall effect.