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C-algebras of Toeplitz type from number fields*

We study the Toeplitz-type C*-algebra $\mathcal{T}[R_K]$ generated by the left regular representation of the affine semigroup of the ring of integers R_K in an algebraic number field K . We give a presentation in terms of generators and relations and describe $\mathcal{T}[R_K]$ as a semigroup crossed product. We also show that the correspondence $K \rightarrow \mathcal{T}[R_K]$ is functorial with respect to field extensions, and we compute the KMS equilibrium states of a natural time evolution, which exhibit a phase transition associated to the ideal class group of K . This is joint work with J. Cuntz and C. Deninger.