

## Lattice rules in Chebyshev space

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### Abstract

Lattice rules mainly wander around in “Periodic space”, i.e., for continuous and smooth functions defined on the Torus. Here we follow lattice rules on a trip through Chebyshev space. We map from Chebyshev space to cosine space and then further to Fourier space. This enables us to study lattice rules for function approximation in Chebyshev space. Fast DCTs can be used to map point values to frequency representation and visa versa. We provide efficient algorithms for CBC style construction of good lattice rules for approximation.