

## Constructing shearlet dilation groups

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It has been observed that in higher dimensions there are several distinct possibilities of incorporating shearing operations in a matrix group giving rise to an irreducible, square-integrable representation with associated wavelet transform and inversion formula. One alternative to the classical shearlet dilation group introduced by Dahlke and Teschke is the so-called Toeplitz shearlet group.

In this talk I introduce a general class of shearlet dilation groups, comprising and extending the previously studied examples, and show how they can be systematically and classified using a close relation to nilpotent commutative algebras. Each of these groups comes with a well-defined coorbit theory, and I exhibit vanishing moment criteria for wavelets giving rise to atomic decompositions of these spaces. In particular, all these groups admit compactly supported atoms.