

The state of the art in shearlet coorbit theory

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The detection of directional information is currently a huge challenge in applied analysis, and many representation systems have been designed for this purpose such as curvelets, contourlets, shearlets and many others. Among these, the shearlet transform stands out since it stems from a unitary, square integrable representation of a specific group, the full shearlet group. In this talk, we will discuss this group theoretical background. Moreover, there is a natural relation to the coorbit theory that has been derived by Feichtinger and Gröchenig. We will briefly recall the basic concepts of coorbit theory. Then, we will explain how this approach can be used to design new smoothness spaces, the shearlet coorbit spaces, as well as associated Banach frames. Moreover, we will discuss the basic properties of these spaces, i.e., we will derive embedding, trace and density results, respectively.