The Continuous Shearlet Transform in Arbitrary Space Dimensions

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The talk is concerned with the generalization of the continuous shearlet transform to higher dimensions. Similar to the two-dimensional case, our approach is based on translations, anisotropic dilations and specific shear matrices. In particular, we address the problem how to choose shear matrices in order to end up with square integrable representations of the corresponding shearlet groups. Moreover, we verify that by applying the coorbit theory, canonical scales of smoothness spaces and associated Banach frames can be derived. We also indicate how our transform can be used to characterize singularities in signals.

This is joint work with S. Dahlke (University of Marburg, Germany) and G. Teschke (University of Applied Sciences Neubrandenburg, Germany).