

Mathematical Physics

All the Groups of Signal Analysis from the (1+1)-affine Galilei Group

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We study the relationship between the (1+1)-affine Galilei group and four groups of interest in signal analysis and image processing, viz., the wavelet or the affine group of the line, the Weyl-Heisenberg, the shearlet and the Stockwell groups. We show how all these groups can be obtained either directly as subgroups, or as subgroups of central extensions of the affine Galilei group. We also study this at the level of unitary representations of the groups on Hilbert spaces.

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