TWAREQUE ALI, Concordia University, Montreal

The Galilei group and its extensions in constructing signal transforms

We show how certain extensions of the Galilei group in (1+1)-dimensions (in space-time), which are physical kinematic groups, accomodate all the groups currently used in constructing signal transforms, viz, the affine, the Weyl-Heisenberg, the shearlet and the Stockwell groups. We also analyze how the signal transforms themselves sit within representations of the larger group. The results demonstrate a remarkable unification of the various signal transforms currently used in the literature.