

LIE GROUP TRANSFORMS IN THE INTERPOLATION OF DIGITAL DATA

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Abstract

Three new n -dimensional transforms, called C -, S -, and E -transform, are to be described. Any compact semisimple Lie group of rank n underlies a variant of the three transforms. Each transform is either continuous or discrete. The later is on an n -dimensional lattice of any density and symmetry compatible with its Lie group. The discrete ones are used to interpolate smoothly n -dimensional digital data. In $n = 2$ they compare favorably with best standard methods, for $n = 3$ they are superior to existing methods in speed and quality of interpolation, for $n > 3$ there are no competitors.