Fourier quasicrystals and temperate distributions with discrete support and spectrum

We consider crystalline measures on the Euclidean space, i.e., discrete unbounded complex measures with discrete spectrum and their generalization that is temperate distributions with discrete support such that their Fourier transform also has discrete support. We study conditions for support of these objects to be a finite union of translates of full-rank lattices and get the general form of crystalline measures and distributions for this case.

The important tool of the above investigations is a local form of classical Wiener-Levi's Theorem on absolutely convergent trigonometric series. Using this form, we also get a new class of sets of frequencies satisfying Kahane's property.