Title: "Admissibility for Quasiregular Representations of Algebraic Solvable Lie Groups"

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Abstract: For an arbitrary simply connected nilpotent Lie group N, a closed "dilation subgroup" H of $\mathrm{Aut}(N)$ is called admissible if the quasiregular representation τ on $L^2(N)$ admits a "continuous wavelet": a function $\psi \in L^2(N)$ such that $f \mapsto \langle f, \tau(\cdot)\psi\rangle$ is an isometry of $L^2(N)$ into $L^2(N \rtimes H)$. We describe sufficient conditions for admissible H in the case where H is an abelian algebraic subgroup of semisimple automorphisms, by the following procedure. First we construct an explicit parametrization for H-orbits in the dual space $\hat{N}$, and thereby obtain an explicit analysis of the action of the dilation subgroup on the operator-valued Fourier transforms of L^2-functions. This leads to a concrete decomposition of $L^2(N)$ as a direct sum of invariant, multiplicity-free subspaces, and it is enough to consider wavelets in these subspaces. Here a Calderón-type admissibility condition is proved, and this combined with the orbital analysis is used to construct subspace wavelets explicitly on the Fourier transform side.