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Analysis on the 2-Dim Quantum Poincare Group at Roots of Unity

of
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Abstract: 2-Dim quantum Poincaré Group $E_q(1,1)$ at roots of unity, its dual $U_q(e(1,1))$ and some of its homogeneous spaces are introduced. Invariant integrals on $E_q(1,1)$ and its invariant discrete subgroup $E(1,1/\text{mid } p)$ are constructed. *-Representations of the quantum algebra $U_q(e(1,1))$ constructed in the homogeneous space $SO(1,1/\text{mid } p)$ are integrated to the pseudo-unitary representations of $E_q(1,1)$ by means of the universal T-matrix. $U_q(e(1,1))$ is realized on the quantum plane $E_q^{(1,1)}$ and the eigenfunctions of the complete set of observables are obtained in the angular momentum and momentum basis. The matrix elements of the pseudo-unitary irreducible representations are given in terms of the cut off q-exponential and q-Bessel functions whose properties we also investigate.

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