

## THE $su(1,1)$ -MODELS OF QUANTUM OSCILLATOR

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### S u m m a r y

Models of a quantum oscillator on the base of the discrete series representations of the Lie algebra  $su(1,1)$  are constructed. The position and momentum operators in these models coincide with the operators  $J_2$  and  $J_1$  of these representations, respectively. As for the standard quantum harmonic oscillator, the position and momentum operators in the models have continuous simple spectra, covering the real line. The eigenfunctions of these operators are explicitly found. It is shown that the usual quantum harmonic oscillator is a limit of the oscillators constructed in the paper, that is, the last oscillators can be considered as deformations of the quantum harmonic oscillator.