Painlevé IV transcendents generated from the complex oscillator

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Supersymmetry transformations are used to generate exactly solvable potentials departing from the complex oscillator. It is shown that the corresponding Hamiltonians are ruled by polynomial Heisenberg algebras. By applying a process to reduce the degree of these algebras to 2, a connection with the Painlevé IV equation is achieved, leading to the design of an algorithm to generate Painlevé IV transcendents.

This is joint work with J. C. González.

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