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*Fourth order Superintegrable systems separating in Cartesian coordinates- Exotic quantum potentials*

We consider two-dimensional quantum Superintegrable Hamiltonians with separation of variables in Cartesian coordinates. We focus on systems that allow fourth-order integrals of motion, also potentials satisfying nonlinear ODEs with the Painlevé property. We classify all potentials expressed in terms of Painlevé transcendents and their integrals.