

# On the two-dimensional Coulomb-like potential with a central point interaction

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We provide an exact mathematical meaning to the formal differential expression  $-\Delta_{x,y} - C\sqrt{x^2 + y^2}$ ,  $C > 0$  as a quantum mechanical observable. The resulting one-parametric family of operators comprises not only the two-dimensional Coulomb-like Hamiltonian but also the Hamiltonians with the additional point interaction. Spectral properties of these Hamiltonians as well as their Green functions are investigated in detail. The problem is also reformulated into the momentum representation. This contribution is based on the joint work with Pavel Št'ovíček.