

The Hydrogen Atom in Higher Dimensions

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In this bachelor's thesis, the hydrogen atom problem is examined in the case of N spatial dimensions. We generalize the conserved quantities from three dimensions, such as angular momentum and the Laplace-Runge-Lenz vector, in N dimensions and uncover a hidden $SO(N+1)$ symmetry. Using algebraic methods, we determine the energy spectrum of the hydrogen atom and the degeneracies of the energy levels. Finally, we compare the obtained results with the three-dimensional case.