



# Relativistic Treatment of Spin-0 Particles Under the Trigonometric Scarf Potential

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## Abstract

We investigate s-state solutions of the Klein-Gordon equation with equal scalar and vector trigonometric Scarf potentials [1] using the functional analysis approach. We obtain the energy eigenvalues and the corresponding eigenfunctions in relativistic theory. It is shown that the radial wavefunctions can be expressed as hypergeometric functions and Jacobi polynomials [2]. Remarkably, in the non-relativistic limit, the present results are in excellent agreement with those obtained via the Nikiforov-Uvarov method [1].

**Keywords:** Jacobi polynomials, trigonometric potential, functional analysis approach.

## References:

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