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On the curvature and torsion effects in onedimensional waveguides

This is joint work with G. Bouchitté and L. Mascarenhas.

When considering the time independent Schrödinger's equation, with an infinite potential at the boundary and for a curved tube, the wave function turns out to be a solution of an eigenvalue problem for Laplace's operator, whose eigenvalues are associated with different energy levels.

In this work, we study the limit problem as the thickness of the tube's cross section goes to zero and show the effect of the curvature and of the torsion, of the tube's central axis, on the energy levels.