

Effective Hamiltonian in curved quantum waveguides as a consequence of strong resolvent convergence

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The Dirichlet Laplacian in a curved two-dimensional strip built along a plane curve is investigated in the limit when the uniform cross-section of the strip diminishes. We show that the Laplacian converges in a strong resolvent sense to the well known one-dimensional Schroedinger operator whose potential is expressed solely in terms of the curvature of the reference curve. In comparison with previous results we allow curves which are unbounded and whose curvature is not differentiable. This is a joint work with David Krejčířik.