1015-49-235 **Almut Burchard*** (almut@math.toronto.edu), University of Toronto, Department of Mathematics, Toronto, ON M5S 2E4, Canada, and **Lawrence E. Thomas** (let@virginia.edu), University of Virginia, Department of Mathematics, Charlottesville, VA 22904. *On an isoperimetric conjecture for a Schrödinger operator depending on the curvature of a loop.*

Let C be a smooth closed curve of length 2π in $\mathbb{R}^3$, and let $\kappa(s)$ be its curvature, regarded as a function of arc length. We associate with this curve the one-dimensional Schrödinger operator $H_C = -d^2/ds^2 + \kappa^2$ acting on the space of square integrable 2π-periodic functions. A natural conjecture is that the lowest spectral value $e(C)$ is bounded below by 1 for any curve (this value is assumed when C is a circle). We study a family of curves that includes the circle and for which $e(C) = 1$ as well. We show that the curves in this family are local minimizers, i.e., $e(C)$ can only increase under small perturbations leading away from the family. (Received February 06, 2006)