Gap estimates for Schrödinger operators depending on curvature

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Schrödinger operators depending on curvature, of the form

$$-\nabla^2 + q(\kappa)$$

on $L^2(M)$, where M is a compact surface or submanifold of R^n arise in the study of thin structures, among other topics in physics. Typically, q is a quadratic function of the principal curvatures. The author will present some estimates of the low-lying eigenvalues and the gaps between them. In some cases these estimates are shown to be optimal.