On Harrell-Stubbe Type Inequalities for the Discrete Spectrum of a Self-Adjoint Operator

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We produce a new proof and extend recent results by Harrell and Stubbe for the discrete spectrum of a self-adjoint operator. An abstract approach is used to produce the theorems. We also analyze the strength of the various inequalities that ensue, and display various applications to physical and geometric problems. The results contain all the known classical results (Payne-Polya-Weinberger, Hile-Protter, H.C. Yang).

This is joint work with Mark S. Ashbaugh