1057-47-49   **Evans M. Harrell*** (`harrell@math.gatech.edu`), School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332-0160. *Semiclassical estimates of eigenvalues of quantum Hamiltonians arising in nanophysics.*

I will discuss "sum rule" identities that can be derived using traces of commutators of operators. One use of these identities is is to derive sharp semiclassical estimates of Lieb-Thirring type. I will explain this connection and derive sharp Lieb-Thirring inequalities for Schroedinger operators on curves, surfaces, and graphs, which are models for quantum wires, waveguides and networks in nanophysics. Parts of this work are joint with Semra Demirel, Lotfi Hermi, Joachim Stubbe, and Selma Yildirim Yolcu. (Received December 19, 2009)