Explorations into the Schrodinger Uncertainty Relation NATHAN STEIGER, JEAN-FRANCOIS VAN HUELE, Brigham Young University — Are there situations that find the Heisenberg Uncertainty Relation lacking? We use harmonic oscillators, free particle wave packets, square wells, and spin to demonstrate the need for the unsung Schrödinger Uncertainty Relation. Schrödinger expanded upon Heisenberg's original informal relation $\Delta x \Delta p \approx h$ and Robertson's formal derivation of $\Delta A \Delta B \geq \frac{1}{2}|\langle[\hat{A},\hat{B}]\rangle|$ to find $\Delta A \Delta B \geq \sqrt{\left(\frac{1}{2}\langle\{\hat{A},\hat{B}\}\rangle - \langle\hat{A}\rangle\langle\hat{B}\rangle\right)^2 + \left|\frac{1}{2}\langle[\hat{A},\hat{B}]\rangle\right|^2}$. We will highlight the importance of the contributions that eluded Heisenberg. These contributions have both classical and quantum realizations.

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