

**Phys. 599, October 14, 2009 presentation:**  
**Extracting information from Schrödinger wave functions**

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### Abstract

Typically, information about quantum systems is expressed in terms of density matrices applicable to both pure and mixed states. Methods to extract information about a microscopic system, *e. g.* magnetic and electric moments, mean particle velocities, *etc.* involve expectation values with no reference to a Schrödinger wave functions. For the special case of pure states Schrödinger wave functions carry information about microscopic dynamics. I will discuss a little known method for computing physical observables that is used with time-dependent Schrödinger wave functions. The method will be illustrated with some examples that draw attention to vortices in time-dependent wave functions for simple one-particle systems.

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