

# Environmental distinction of pointer states

*Friday, 22 June 2012 10:00 (30 minutes)*

Can one understand the emergence of classical physics in a quantum mechanical framework? An important step to answer this question is to explain the origin of super-selection rules observed at macroscopic scales. Two specific cases will be discussed, based on microscopically realistic master equations. In the first part, I will show how the distinction and stability of chiral molecular configuration states can be explained by decoherence. In the second part, the emergence and dynamics of motional pointer states will be explored, by associating them with the solitonic solutions of a nonlinear equation related to a particular stochastic unraveling of the appropriate master equation.

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**Session Classification:** Part V