

# A Quantum Mechanical Measurement Leading to Simultaneous Spin-Up and Spin-Down State of a Single Electron

Noninski, Vesselin (2003) A Quantum Mechanical Measurement Leading to Simultaneous Spin-Up and Spin-Down State of a Single Electron.

Full text available as:

[PDF](#) - Requires a viewer, such as [Adobe Acrobat Reader](#) or other PDF viewer.

## Abstract

It is shown that when two observers carry out a simultaneous measurement on a pair of spin- $\frac{1}{2}$  particles in a "singlet" state a possibility exists for an outcome that lacks physical meaning. More specifically, despite the fact that the two commuting operators formally possess simultaneous eigenvectors it is not possible for physical reasons these eigenvectors to exist simultaneously. It is pointed out that the possibility for such non-physical outcome is observed only in the case of "singlet" state which puts into question the physical meaning of such state, and following from it exotic notions such as "non-locality". This hints that probably QM in its present form should be reconsidered with regard to its limitations.

**Keywords:** Quantum Mechanics, Singlet State, Two Spin-1/2 Particles, Non-Locality, Simultaneity

**Subjects:** [Specific Sciences: Physics: Quantum Mechanics](#)

**ID Code:** 1014

**Deposited By:** [Noninski, Vesselin](#)

**Deposited On:** 25 February 2003