

Abstract Submitted
for the NWS11 Meeting of
The American Physical Society

Resolution of the EPR Paradox for Fermion Spin Correlations

ROBERT CLOSE — The EPR paradox addresses the question of whether a physical system can have a definite state independent of its measurement. Bell's Theorem places limits on correlations between local measurements of particles whose properties are established prior to measurement. Experimental violation of Bell's theorem has been regarded as evidence against the existence of a definite state prior to measurement. We model fermions as having a spatial distribution of spin values, so that a Stern-Gerlach device samples the spin distribution differently at different orientations. The computed correlations agree with quantum mechanical predictions and experimental observations. Bell's Theorem is not applicable because for any sampling of angles, different points on the sphere have different density of states.

Robert Close

Date submitted: 19 Sep 2011

Electronic form version 1.4