Bell's inequality from separate common causes

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Abstract

Standard derivations of the Bell inequalities assume a *common* common cause system that is a common screener-off for all correlations and some additional assumptions concerning locality and no-conspiracy. In a recent paper (Graßhoff et al., 2005) Bell inequalities have been derived *via* separate common causes assuming perfect correlation between the events. In the paper it will be shown that this separate-common-cause-model implies a *common* common cause system and hence it does not regard as a *genuine* separate-common-cause-type derivation. However, assuming non-perfectly correlating pairs of events a *genuine* separate-common-cause-type derivation of the Bell inequalities can be given. Moreover, this derivation renders Szabó's (2000) conjecture concerning the non-existence of a local, non-conspiratorial, separate-common-cause-model for the EPR, experimentally testable.

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