

# Probability theory and causation. A branching space-times analysis

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## Abstract

We provide a formally rigorous framework for integrating singular causation, as understood by Nuel Belnap's theory of *causae causantes*, and objective single case probabilities. The central notion is that of a causal probability space whose sample space consists of causal alternatives. Such a probability space is generally not isomorphic to a product space. We give a causally motivated statement of the Markov condition and an analysis of the concept of screening-off.

**Keywords:** branching space-times, causation, probabilities, screening-off, Markov condition

**Subjects:** [General Issues: Causation](#)

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