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Section:

11. Mathematical Physics

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Khrennikov, Andrei, University of Växjö, Sweden
p-adic realization of negative probabilities and Einstein-Podolsky-Rosen paradox
We propose stochastic hidden variables model in which hidden variables have a p-adic probability distribution. The frequency definition of p-adic probability is quite similar to the ordinary frequency definition of probability. p-adic frequency probability is defined as the limit of frequencies but in the p-adic metric. In particular, negative rational numbers can be p-adic probabilities (i. e., we construct a mathematical theory corresponding to ideas of P. Dirac and R. Feynman about negative probability distributions in quantum physics). In our model Bell's inequality is violated.
Reference: A. Yu. Khrennikov, Non-Archimedean analysis: quantum paradoxes, dynamical systems and biological models. Kluwer Academic Publishers, Dordrecht, 1997.