Asymptotic (algorithmic/ergodic) Randomness vs. Randomness in Natural Sciences

Giuseppe Longo
CNRS, CREA, Ecole Polytechnique et ENS, Paris
http://www.di.ens.fr/users/longo

Abstract. I will shortly introduce classical (dynamical or ergodic), quantum and algorithmic randomness. In physics, differing probabilities, as a measure of randomness, evidentiate the differences between the various notions. Yet, asymptotically, one is universal: Martin-Löf or algorithmic randomness provides a clearly defined and robust notion of randomness for infinite sequences of numbers. This notion is based on computability theory (it is a strong form of undecidability) and may be related to classical physical randomness. The question will be raised (and some proposal will be hinted) of what randomenss may mean in biological organisms, along ontogenesis and/or Evolution.

References (see downloadable papers in http://www.di.ens.fr/users/longo)

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