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Laws of Information Conservation (Nongrowth) and Aspects of the Foundation of Probability Theory

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A new alternative definition is given for the algorithmic quantity of information defined by Kolmogorov. The nongrowth of this quantity is proved for random and certain other processes. The established properties are used to investigate problems related to the approach of [A. N. Kolmogorov, *Probl. Peredachi Inf.*, 1965, vol. 1, no. 1, pp. 3–7; P. Martin-Lóf, *Inf. Control*, 1966, vol. 9, no. 6, pp. 602–619] with bearing on the foundation of probability theory.