Microcanonical entropy for classical systems

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We propose a novel definition for the microcanonical entropy that resolve the debate on the correct definition of the microcanonical entropy.

This entropy definition fixes the problem inherent the exact extensivity of the caloric equation.

This entropy reproduces results in agreement with the Boltzmann entropy in the case of macroscopic systems.

The predictions obtained with the Boltzmann entropy and with the entropy we propose, are different for small system sizes.

The entropy we propose rigorously satisfies the postulate of equal a-priory probability.