MPIDS Colloquium

MAX-PLANCK-GESELLSCHAFT

Irreversibility and Dissipation

Prof. Dr. Juan Parrondo

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We learn in undergraduate courses the intimate relationship between entropy and irreversibility: an irreversible process is characterized by an increase of entropy. In the last years and using concepts from information theory, we have been able to quantify irreversibility and relate this measure of irreversibility to the entropy produced along a process. More recently, we have applied these ideas to estimate the entropy production in biophysical processes. Entropy production is closely related to relevant quantities in biophysics which are hard to measure, such as the ATP consumption. Our technique allows one to estimate the entropy production even in the absence of currents and flows, where the standard methods from irreversible thermodynamics fail. We can in principle detect if a system is far from equilibrium in the absence of currents. In biophysics, this is equivalent to discern if a process is active or passive, valuable information to find out the physical mechanisms behind molecular motors and other systems.

Wednesday, June 24th, 2020 at 2:15 pm

MPIDS, video conference at www.zoom.us
Meeting ID: 931 9601 3437
Password: 272091, direct link

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