

Radboud University Nijmegen



Natural Computations in Physics > Dissipative Systems



Physics of Life - How does complexity emerge under 2nd Law of Thermodynamics?

Open systems>>Continuous flow>>Energy>>Energy gradients>>Pattern formation

High energy / ordered states need to be dissipated as heat / disorder (2nd Law)

However, stable patterns emerge that eventually self-replicate >> Natural selection mechanism

Self-replicating systems turn out to be efficient der/energy dissipators! (e.g. exponential growth)

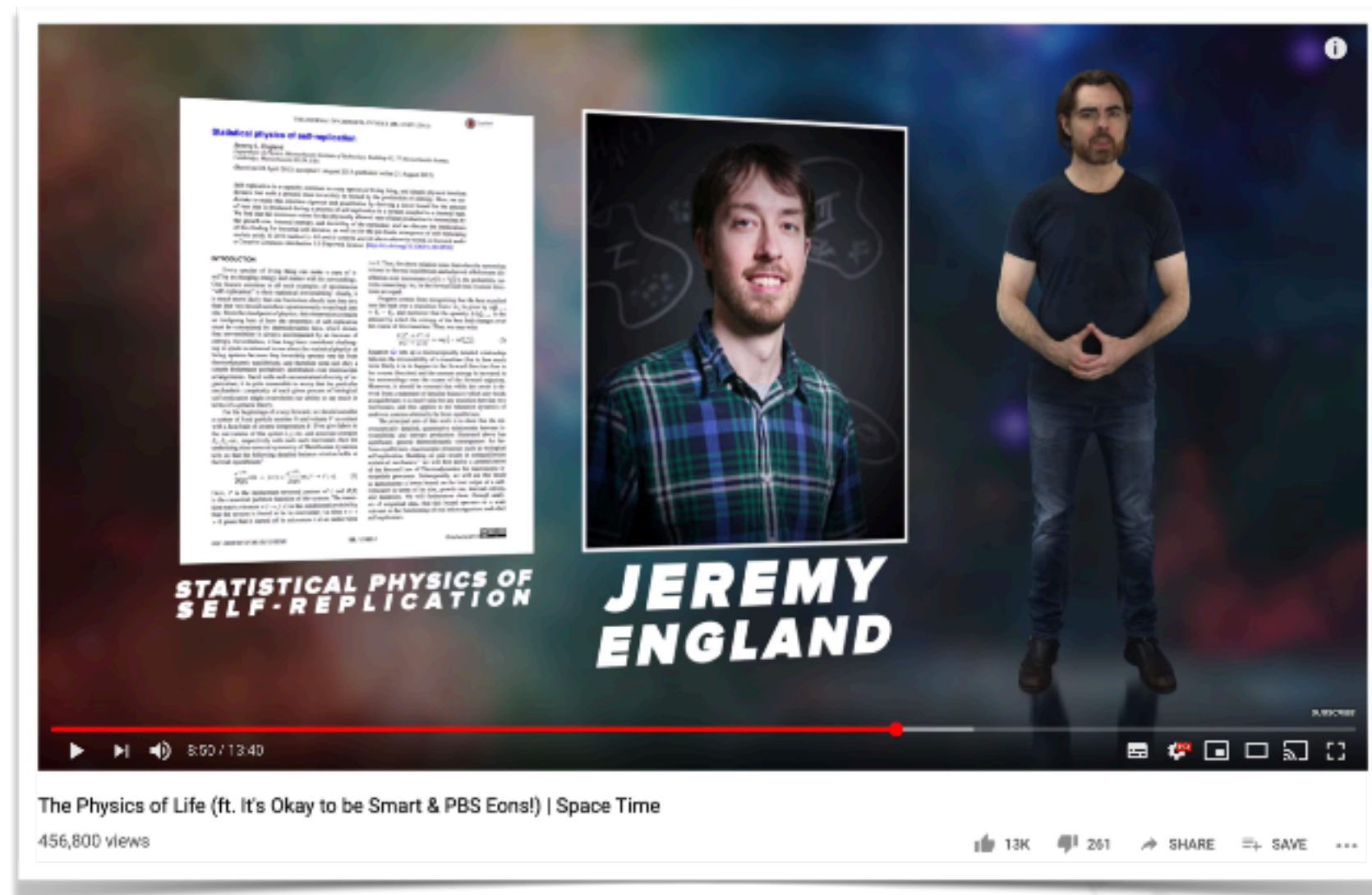
<https://youtu.be/GcfLzSL7YGV>

England, J. L. (2013). Statistical physics of self-replication. *The Journal of chemical physics*, 139(12), 121923. <https://doi.org/10.1063/1.4818538>

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Temporal properties of variability: Sample entropy

