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## NITheCS Webinar
## Friday, 19 November 2021, 18h30 – 19h30

Dr Fabio Anza (Templeton Independent Research Fellow, Complexity Sciences Center, University of California, Davis)

# "A kinetic theory of information transport"


## ABSTRACT

The past 50 years of scientific and technological progress have highlighted information as a physical resource, one that can be traded for heat, work and other energetic resources, thus modifying our picture of thermodynamics. This is especially so at the nanoscale, where both quantum and collective phenomena cannot be neglected.

In this talk, I will describe a kinetic theory of quantum information transport, built on the geometric approach to quantum mechanics, aimed at elucidating the open, out-of-equilibrium, dynamics of quantum information on the quantum state space resulting from the interactions between the system under study and an environment.


## BIOGRAPHY

Dr Anza holds a PhD at the University of Oxford, UK where, under the supervision of Prof V Vedral, he worked on leveraging techniques from quantum information theory to study the emergence of thermal equilibrium in (1) out-of-equilibrium quantum systems and (2) microscopic models of quantum gravity.

Currently, he works as postdoctoral fellow within Prof Crutchfield's group at the Complexity Sciences Center, University of California, Davis, where he investigates many-body quantum systems in out-of-equilibrium configurations. His work is currently focused around developing, and then exploiting, tools from information theory and dynamical systems theory to study the structure of information flows occurring within a many-body quantum system, and the resulting emergent behaviour.

In December, he will begin his appointment as Research Assistant Professor at the InQubator for Quantum Simulation, University of Washington, Seattle.

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