

Perspectives on Time and Atemporality in Cosmology and Natural Sciences

**17-19 July
2023**

Sala Napoleonica
Palazzo Greppi
Via Sant'Antonio 12
20122 Milan

Emily Adlam - Julian Barbour -
Jeremy Butterfield - Salvatore
Capozziello - Enrico Cinti -
Richard Dawid - Sebastian de
Haro - Nick Huggett - Vincent
Lam - Daniele Oriti - Giulia
Rubino - Marco Sanchioni -
Francesca Vidotto

Program and Organizing Committee: Silvia De Bianchi,
Laura Follesa, Marco Forgione, Laura Marongiu

PROTEUS Final Conference

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"Perspectives on Time and Atemporality in Cosmology and Natural Sciences"

PROGRAM

Monday 17 July 2023

9:45 – 10:00 *Welcome*

Chair: Álvaro Mozota

10:00 – 11:15 **Jeremy Butterfield** "En route to reduction:
Lorentzian manifolds and causal sets"

11:30 – 12:45 **Richard Dawid** "Emergent time and exact
dualities"

Lunch

Chair: Marco Forgione

14:00 – 15:15 **Sebastian de Haro** "On Time and Holes in de
Sitter Spacetimes"

Coffee Break

15:45 – 17:00 **Julian Barbour** "Complexity and a Dynamical
Arrow of Time"

17:00 – 19:00 *Book Symposium*

Enrico Cinti and **Marco Sanchioni** "I paradossi dei buchi neri.
Una spiegazione elementare per comprendere l'universo"
(Carocci 2022). The event is open to the public.

Tuesday 18 July 2023

Chair: Istvan Szapudi

9:30 – 10:45 **Francesca Vidotto** "Quantum Cosmology with no
time from covariant Loop Quantum Gravity"

Coffee Break

11:15- 12:30

Presentation of results: **PROTEUS Research Team**

Lunch

Chair: Federico Viglione

14:30 - 15:45 **Emily Adlam** "The Temporal Asymmetry of
Influence is Not Statistical"

Coffee Break

16:15 – 17:30 **Giulia Rubino** "Theory Independent Tests of
Indefinite Causality"

Wednesday 19 July 2023

Chair: Nicola Bamonti

9:30 – 10:45 **Vincent Lam** "Universality and Effective Temporal
Dynamics: An Epistemic Approach Agnostic to Ontology"

Coffee Break

11:15- 12:30 **Nick Huggett** "Semi-Classical Time in Quantum
Cosmology"

Lunch

Chair: Silvia De Bianchi

14:30 - 15:45 **Daniele Oriti** "A Foundational Trefoil for
Spacetime: Quantum Gravity, Hydrodynamics and Cosmology"

Coffee Break

16:15 – 17:30 **Salvatore Capozziello** "Noether Symmetries in
Quantum Cosmology: A Selection Rule for Observable
Universes"

Farewell