



Mind and Agency in the Foundations of Quantum Physics

MAY 31st - June 3rd, 2022

Argyros Forum 211

In contrast to classical physics, quantum physics attributes special significance to the act of “measurement”. This has led to decades of discussions in the foundations of quantum theory. Our workshop brings together scientists and philosophers who see value in exploring whether this hints at the relevance of the first person in physics – the entity that performs the measurement. We will discuss information-theoretic, mathematical, and philosophical arguments that aim at evaluating the potential relation between quantum physics and the first person.

For example, does consciousness play a crucial role in quantum physics, as von Neumann and Wigner claimed decades ago and is this testable? Or are quantum states best interpreted as agent’s subjective degrees of belief about future experiences, as QBism asserts? Or does quantum theory hint at an ontology that is more akin to an idealist worldview? And what should we make of thought experiments involving observers and quantum mechanics, such as Wigner’s friend or Bell experiments with human choices?

Our participants and organizers have very different opinions on these questions, and our workshop will make these views collide head-on, in lively but respectful discussions. We hope to find some common ground and initiate discussions across fields that have so far remained separate.

For Zoom Participation please use:

[https://chapman.zoom.us/j/96588223104?
pwd=MHZpZnE0b1dnRTNqN1lBNWp2WWxTQT09&from=addon](https://chapman.zoom.us/j/96588223104?pwd=MHZpZnE0b1dnRTNqN1lBNWp2WWxTQT09&from=addon)

Meeting ID: 965 8822 3104
Passcode: 413294

RSVP is required - <https://events.chapman.edu/87997>

Tuesday 31st:

10:00am – 10:50am Angelo Bassi "Spontaneous wave function collapse models: an update"

10:50am – 11:40am Kelvin McQueen "Consciousness and the collapse of the wave function"

11:40 – 12:00pm Coffee Break

12:00pm – 12:50pm Leonardo Barbosa "A Measure for Integrated Intrinsic Information"

12:50pm – 2:20pm Lunch

2:20pm – 3:10pm Larissa Albantakis "On the relationship between consciousness, the quantum, and integrated information theory"

3:10pm – 4:00pm Ian Durham "Autonomous Boolean networks as an ontology for integrated information"

4:00pm – 4:20pm Coffee Break

4:20pm - Panel #1: Quantum integrated information theory: can it model the observer?

Panelists: Larissa Albantakis, David Chalmers, Ian Durham, Johannes Kleiner

Chair: Kelvin McQueen

6:30pm - Dinner in Old Town Orange

Wednesday 1st:

10:00am – 10:50am Adrian Kent

10:50am – 11:40am Jenann Ismael "A Participatory Universe in the realist mode"

11:40 – 12:00pm Coffee Break

12:00pm – 12:50pm Christopher A. Fuchs "QBists Don't Mind Being in Pure States; It's Nothing Personal"

12:50pm – 2:20pm Lunch

2:20pm – 3:10pm Bernardo Kastrop "Physics without metaphysical assumptions"

3:10pm – 4:00pm Donald Hoffman "Spacetime is Doomed"

4:00pm – 4:20pm Coffee Break

6:30pm - Dinner in Old Town Orange

Thursday 2nd:

10:00am – 10:50am Mauro d'Ariano

10:50am – 11:40am Lidia del Rio

11:40 – 12:00pm Coffee Break

12:00pm – 12:50pm Veronika Baumann "The reasoning of agents in superposition"

12:50pm – 2:20pm Lunch

2:20pm – 3:10pm Markus Müller "You may be unembedded structure"

3:10pm – 4:00pm Eric Cavalcanti "A "thoughtful" Local Friendliness no-go theorem"

4:00pm – 4:20pm Coffee Break

4:20pm - Panel #2: Wigner and Friends: what can we learn from thought experiments involving observers in superposition?

Panelists: Veronika Baumann, Eric Cavalcanti, Lidia del Rio, Matt Leifer, Howard Wiseman

Chair: Markus Müller

Friday 3rd:

10:00am – 10:50am Catalina Oana Curceanu "Testing Quantum Mechanics Underground: Sneaking a look at God's cards"

10:50am – 11:40am Johannes Kleiner "Collapse and the Closure of the Physical"

11:40 – 12:00pm Coffee Break

12:00pm – 12:50pm Avshalom Elitzur

12:50pm – 2:20pm Lunch

2:20pm – 3:10pm Jeff Tollaksen

3:10pm – 4:00pm Lucien Hardy "Proposal to use Humans to switch settings in a Bell experiment"

4:00pm – 4:20pm Coffee Break

4:20pm - David Chalmers "Wrap-up talk: Dualism and idealism in the foundations of quantum mechanics"