

Emergence of Classicality 2024:
*New Perspectives on
Measurements in Quantum Theory*



TRINITY
COLLEGE
DUBLIN

15-19 July 2024

Welcome...



...to ***The Provost, Fellows, Foundation Scholars and the other members of Board of the College of the Holy and Undivided Trinity of Queen Elizabeth near Dublin***

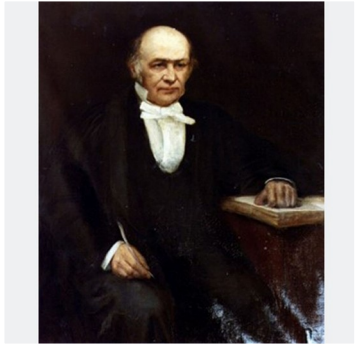
(Irish: Coláiste Thríonóid Naofa Neamhroinnté na Banríona Eilís gar do Bhaile Átha Cliath)

- Founded in 1592
- One of seven remaining Ancient Universities
- 2022-2023: ca. 21k students

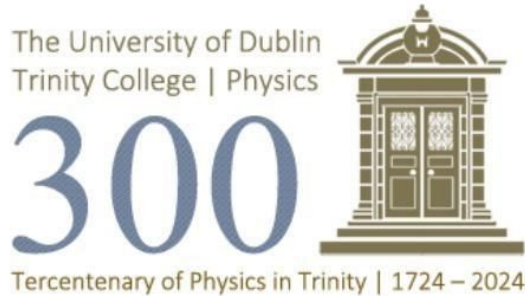
1724-2024: 300 years of physics



Richard Helsham
(1682 – 1738)



Sir William Rowan Hamilton
(1805 – 1865)



tcd.ie/physics/300/

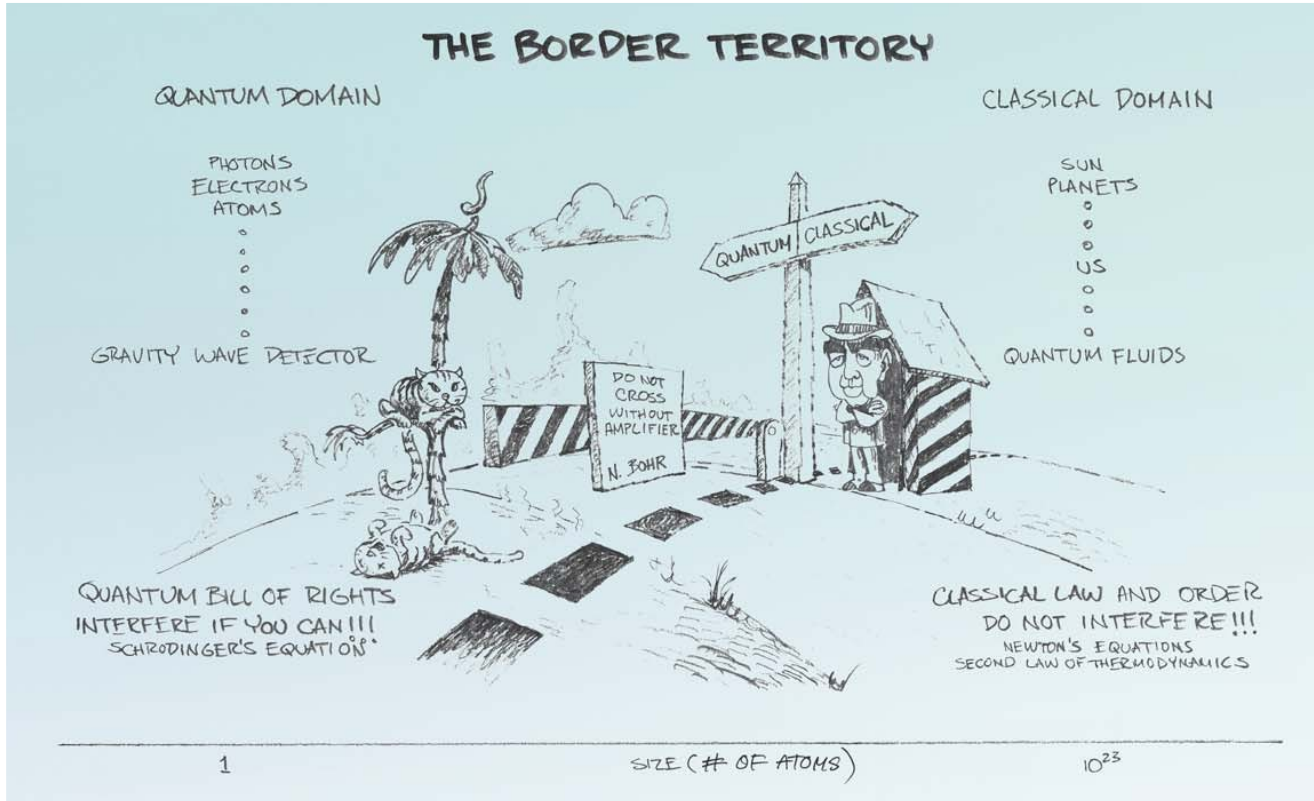


George Francis Fitzgerald
(1851 – 1901)



Ernest T. S. Walton
(1906 – 1995)

EoC 2024: background



[Wojciech H. Zurek: *Decoherence and the transition from quantum to classical – revisited*, Los Alamos Science **27** 86-109 (2002)]

EoC 2024: background



Irreversibility in thermodynamics → 2nd law
Irreversibility in quantum theory → measurement

Textbook quantum measurement appears in conflict with the laws of thermodynamics.

More broadly:

What can quantum thermodynamics and quantum foundations learn from each other?

EoC 2024: scope

Quantum Darwinism

What gets measured?
What makes an apparatus?

What leads to objectivity/
intersubjectivity?

Measurement & paradoxes

Is quantum measurement emergent?

...

Thermodynamics of measurement

Equilibration

What does it take to cool a system (a pointer?) to zero?

...

Do reversible dynamics suffice to describe measurement?

EoC 2024: spirit

Bridge boundaries
between fields

Explore new topics

Hello, my
name is...

Connect research
communities

Ask questions
(at the end of talks)

Would you like
to join the
conversation?

See conference website for code of conduct.

Programme preview

		Tuesday 16/07	Wednesday 17/07	Thursday 18/07	Friday 19/07	
8:30 - 9:30	Registration & Coffee					
9:30 - 9:45	Introduction					
9:45-10:30	Jaroslav Korbicz	Howard Wiseman	Lina Jansson	V. Vilasini	Nicole Yunger Halpern	9:30 - 10:15
10:30 - 11:00	Sophie Engineer	Florian Meier	Caroline Jones	Minjeong Song	Benjamin Yadin	10:15 - 10:45
11:00 - 11:30	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break	10:45 - 11:15
11:30 - 12:00	Mohammad Hamed Mohammady	Philip Taranto	William Zeng	Nick Ormrod	Karen Hovhannisyan	11:15 - 11:45
12:00 - 12:30	Cyril Elouard	Armen Allahverdyan	Johannes Fankhauser	Nicholas LaRacuente	Giulia Rubino	11:45 - 12:15
12:30 - 14:00	Lunch break	Lunch break				12:15 - 14:00
14:00 - 14:30	Diana A. Chisholm	Henning Kirchberg	Markus Frembs	José Luis Gaona Reyes	Eoin Carolan	14:00 - 14:30
14:30 - 15:00	Alexandre Orthey	Shintaro Minagawa	Roberto Doba Baldijao	Alessandro Tosini	Thiago Rodrigues de Oliveira	14:30 - 15:00
15:00 - 15:30	Arsalan Adil	Paul Skrzypczyk	Carlo Cepollaro	Social Programme	Jiaxuan Zhang	15:00 - 15:30
15:30 - 16:00	Coffee break	Discussion time	Coffee break		Departure	15:30 - 16:00
16:00 - 16:30	Tomonori Matsushita		Carlos Pineda			16:00 - 16:30
16:30 - 17:00	Lorena Ballesteros Ferraz		Finn Schmolke			16:30 - 17:00
17:00 - 17:30	Giuseppe Antonio Nisticò		Lev Vaidman			17:00 - 17:30
17:30 - 18:00		Poster Session				17:30 - 18:00
18:00 - ...			Conference dinner			18:00 - ...

Conference photo:
Wed ~12:15

in front of this building

Speakers:

Please test the hardware before your talk.

Yutong Luo is available to assist.

Contributed talks are 25mins + 5mins

Relevant locations



Social programme – Thursday afternoon

Dublin walking tour



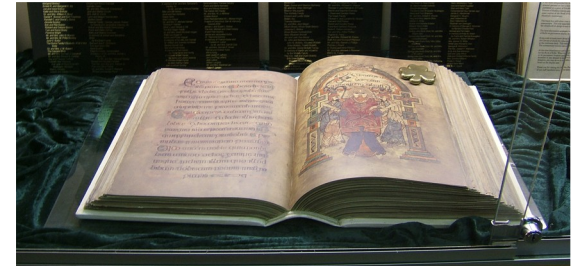
~2hrs
depart @3:30pm

Clifftop hike at Howth



~7km hike
return to Howth ~7pm
depart @3:30pm

Campus tour and Book of Kells

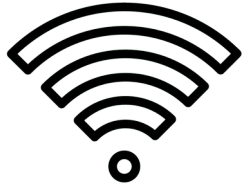


~2hrs
most accessible option
start @4pm

Please indicate your preference by the end of today's afternoon coffee break.

More details on when and where to meet on Thursday morning.

Some useful info



Eduroam
or ask
Srishti Nautiyal
for a code



@EoC24Conf



More toilets in SNIAM building
next door
(access via walkway from
groundfloor)



No smoking
on campus



Water tap in first floor kitchen



Staircase
on your front left

Thank you

Conference Committee

- Pharnam Bakhshinezhad (TU Wien)
- Veronika Baumann (IQOQI Vienna)
- Felix Binder (Trinity)
- Alessandro Candeloro (Trinity)
- Tiago Debarba (Universidade Tecnológica Federal do Paraná)
- Maximilian Lock (TU Wien)
- Tom Rivlin (TU Wien)
- Emanuel Schwarzhans (Uni. of Malta)

Student Volunteers:

- Sean Alexander
- Luke Hodgkiss
- Yutong Luo
- Srishti Nautiyal
- Kacper Nowak

The University of Dublin
Trinity College | Physics

300

Tercentenary of Physics in Trinity | 1724 – 2024



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