

NITheP Colloquium

Tuesday, 08 December 2020, 16h00

Prof Gershon Kurizki

Weizmann Institute of Science (WIS), Israel

The Observer and the World: Does Science describe the Universe?

Abstract: What is the rapport between us (“observers”) and the World? My personalized tour through science and culture will present the view that the observer plays an indispensable and active role in shaping the World. There are grounds, deeply rooted in human culture, to maintain that Science does not reveal the World, as claimed by Einstein, but rather reflects our cognition, as believed by von Neumann, Wigner and Schroedinger. This view is supported by the fact that Information, an overtly human-centered notion, is key to thermodynamics and quantum mechanics. I will show that, remarkably, it can affect allegedly “objective” observables: work, motion, temperature. The unavoidable question is: who possesses the Information on the World? The answer, I surmise, takes us outside the realm of physics. Gershon Kurizki and Goren Gordon, “The Quantum Matrix”, Oxford University Press, 2020.

Bio: Professor Gershon Kurizki joined the Weizmann Institute of Science (WIS) in 1985, where he became tenured Professor in 1991. He holds the G.W. Dunne Professorial Chair in Quantum Optics at WIS since 1998. His fields of international renown include Quantum Thermodynamics and Control of Open Quantum Systems; Quantum Optics and Quantum Light-Matter Interactions. He has published over 60 high-profile articles (Phys.Rev.Letters, Nature and PNAS) out of 250 publications thus far (h-index: 57; i-10 index: 162, 11000 citations). He has delivered over 250 invited and plenary talks at international conferences/workshops so far. His recognition includes: the Optical Society of America Fellowship (since 1999); the American Physical Society (APS) Fellowship (since 2002); the UK Institute of Physics Fellowship (since 2004); the Lamb Award in Laser Physics and Quantum Optics (2008); the Humboldt-Meitner Award in Atomic Physics (2009). He publishes philosophical essays and poetry and has written a popular science book (“The Quantum Matrix” Oxford Univ. Press (2020)). Kurizki’s research is focused on the control of open quantum systems and their thermodynamic aspects. The motto of his research is that “the bath is more a friend than a foe”: it can be a probe, a diagnostic tool or a quantum resource.

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