

The **Vienna Center for Quantum Science and Technology**
(VCQ) invites you to a

COLLOQUIUM TALK

by

Chris Fewster

(*University of York*)

Measurement in quantum field theory: what's the problem, and what's the cure?

Many presentations of quantum mechanics include a postulate that the state of a system undergoes an instantaneous change following a measurement. This is clearly incompatible with special and general relativity and raises questions concerning the description of measurement in quantum field theory (QFT). Attempts to extend measurement postulates to QFT by hand have produced pathologies, such as the “impossible measurements” described long ago by Sorkin. I will present a recent operational approach to these questions, which models measurement of one quantum field (the system) by coupling it to another (the probe). This is all accomplished in a model-independent way within algebraic quantum field theory. The resulting framework provides a description of measurement in QFT that is causal, covariant and consistent, and includes state update rules that are derived from the formalism, and works equally well in flat or curved spacetimes.

Monday, 13th March 2023

Freihaus Hörsaal 3 at TU Wien
Wiedner Hauptstraße 8, 1040 Vienna, 2. OG

18:00 VCQ Student Talk by David Trillo

"Quantum supremacy in mechanical tasks: projectiles, rockets and quantum backflow"

18:15 VCQ Colloquium talk by Prof. Fewster

After the talk, drinks & snacks on the roof-top terrace!
Freihaus, Tower A, 9. OG

Host: Miguel Navascues

for further information and the zoom-link please visit
<https://vcq.quantum.at/colloquium-ss-23/>