Extreme Universe Colloboration

The 4th COLLOQUIUM

March 30th (Wed.) ONLINE

TALK 10:00 am - 11:00 am (JST)

March 30th (Wed.) 1:00 am - 2:00 am (UTC)

March 29th (Tue.) 6:00 pm - 7:00 pm (PDT)

ONLINE COFFEE TIME
11:00 am - 12:00 am (JST)

Registration required (click HERE)

Extreme Universe, JAPAN

Speaker

Prof. Robert Raussendorf

The University of British Columbia

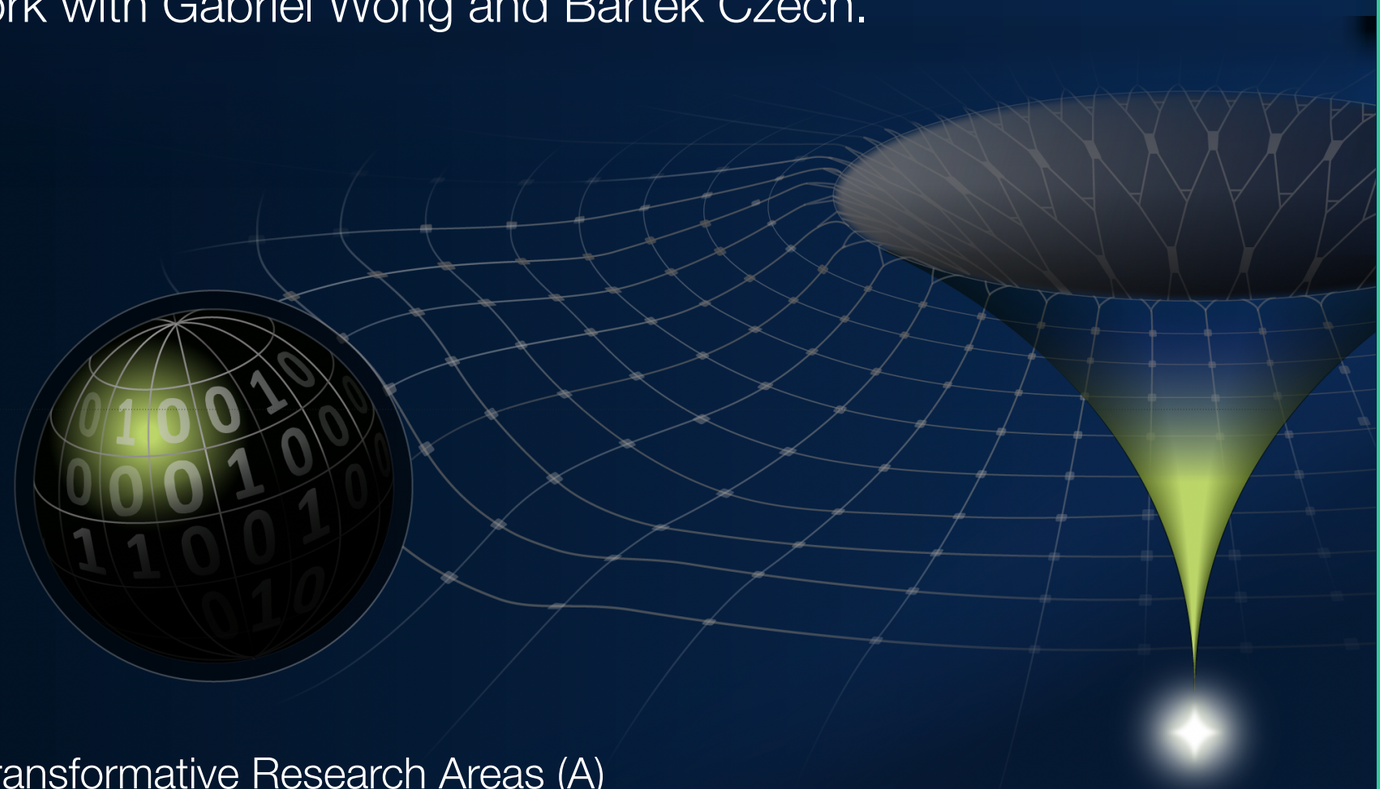
Title

A gauge theory of measurement-based quantum computation

Abstract

I construct a gauge theory of measurement-based quantum computation (MBQC). The benefit of such a description is that it connects the local with the global in MBQC. Local, i.e., one measurement or a small group of measurements at a time, are the gate simulations. Global is the computational out put, which, in the gauge theory framework, corresponds to holonomies of the gauge field. I begin with a review of the computational scheme of MBQC, then describe the corresponding gauge theory, and close by explaining the connection with computational phases of quantum matter, i.e., MBQC using states with symmetry-protected topological order as computational resources. This is a joint work with Gabriel Wong and Bartek Czech.

2021



MEXT -KAKENHI- Grant-in-Aid for Transformative Research Areas (A)
The Natural Laws of Extreme Universe -A New Paradigm for Spacetime and Matter from Quantum Information-