ICFO



PLUS+ TRAINING AND DEVELOPMENT PROGRAM: Four Assorted Quantum Pieces

DR. KAROL ?YCZKOWSKI

May 11, 2021
10:00 to 12:00
Online (Zoom)

Talk 4. Quantum designs and Absolutely Maximally Entangled (AME) states.

An AME state of a system consisting of 2k parties is distinguished by the fact that for an splitting of the system into two parts with k subsystem each, both parties are maximall entangled. Such states, useful to construct quantum error-correction codes an teleportation schemes, are known for several systems including four systems wit N=3,4,5,7,8... levels each and a six-qubit system. We show that the AME(4,6) state of fou subsystems with six levels each exists and present an analytical solution, equivalent to 2-unitary matrix of order 36 and a perfect tensor with 4 indices running from one to six [4] Furthermore, it yields a quantum error correcting ((3,6,2))6 code and can be considered as quantum solution of the famous 36-officers problem of Euler with entangled officers. W

tend to believe this result will trigger further research in the field of quantum designs an quantum combinatorics

[4] S. A. Rather. A. Burchardt, W. Bruzda, G. Rajchel-Mieldzio?, A. Lakshminarayan, and . ?yczkowski, Thirty-six entangled officers of Euler and a quhex quantum error correcti g code, preprint, April 2021

Due to recommendations in place to contribute containing the spreading of COVID-19, th Theory Lectures will be carried out remotely via Zoom. In case you want to receive n invitation to attend the online session, you can send an email tAlba.Berenguer@icfo.eu

Hosted by: HRE