ICFO



PLUS+ TRAINING AND DEVELOPMENT PROGRAM: Four Assorted Quantum Pieces

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May 04, 2021
10:00 to 12:00
Online (Zoom)

Talk 3. Iso-entangled Mutually Unbiased Bases and Mixed-state t-designs

A Euclidean design is a finite set of points in Rn with certain approximation properties. This concept can be generalized to give the notion of pure-state designs: vectors selected in such a way that the average values of the first t moments averaged over the design coincide with the moment obtained by integrating over the set of all states. We introduce a related notio of a mixed-state t-design, which consist of a finite number of density matrices of order N wit analogous properties. Mixed-state designs can be obtained by partial trace of pure states o size N2 forming a pure state design. We construct a set of five iso-entangled Mutuall Unbiased Bases (MUBs) in H4, consisting of 20 pure states with the same degree o entanglement. Performing a partial trace on any of both subsystems leads to 20 single-qubi

mixed states which form a regular dodecahedron inside the Bloch ball and a mixed 3-desig [3]

[3] S. Denisov, T. Laptyeva, W. Tarnowski, D. Chru?cinski and K. ?yczkowski, Univers l spectra of random Lindblad operators, Phys. Rev. Lett. 123, 140403 (2019).

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

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