



HARVARD UNIVERSITY
17 Oxford Street
Cambridge, MA 02138

Mathematical Picture Language Seminar



Wednesday, May 13

3:00 p.m. Boston time

Jefferson 368

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Non-contextual approximations, Magic, and Correlation energy

Abstract: What distinguishes quantum from classical computation? Contextuality, entanglement and more recently magic are leading measures of nonclassicality. I will describe non-contextual Hamiltonians, which arise from a generalization of the Kochen-specker paradox and Peres-Mermin square. I will give various properties of their eigenspaces and define contextual subspace methods that allow any Hamiltonian to be treated as a sum of contextual and non-contextual parts. Recent interest in the stabilizer Renyi entropy as a measure of non-stabilizerness motivates the question of how "magical" are contextual subspace methods? I will describe recent work evaluating magic in contextual subspaces for electronic structure problems, and connecting magic and correlation energy in these subspaces.

This talk will be posted two days after the seminar at
<https://mathpicture.fas.harvard.edu/seminar> and
<https://www.youtube.com/@mathematicalpicturelanguag2715/videos>