Mathematical Picture Language Seminar

Tuesday, April 18, 2023
9:30 a.m. Boston time

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Constructing algebraic quantum field theory

Abstract: Local perturbations of an underlying Lagrangian with normally hyperbolic Euler Lagrange derivative induce operations on a relativistic quantum system. Causality imposes conditions on these operations. The C*-algebra of the generated group yields a generally covariant version of algebraic quantum field theory in the sense of generalized Haag-Kastler axioms. Several structures known from perturbative quantum field theory are visible in the C*-algebraic framework, among them a consistent interaction picture, the renormalization group, Noether's Theorem, anomalies and the time slice axiom. The method works for scalar fields with generic self interaction. The existence problem of constructive quantum field theory reappears as the question whether the algebra admits a vacuum representation.

Zoom QR Code & Link:
https://harvard.zoom.us/j/779283357?pwd=MitXVm1pYUlJVzZqT3lwV2pCT1ZUQT09

https://mathpicture.fas.harvard.edu/seminar