

Abstract Submitted
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Symmetry, structure, and causets in discrete quantum gravity
SERGIO PISSANETZKY, Texas A&M University. Retired — A recent approach in quantum gravity proposes: (1) spacetime is discrete and structured as a causet of events; (2) the transition from continuous to discrete spacetime is a real quantization; (3) all other quantities, such as time, volume, geometry, and matter, are intrinsic properties of the causet; and (4) particles arise as self-organized structures (arXiv: 1112.1064). Critical for this research is a full understanding of causets' intrinsic properties. A general self-consistent theory of causets where only their intrinsic properties are used is proposed [Complexity, 17, 19 (2011)]. Causets are found nearly everywhere, and underlie nearly everything. They are equivalent to algorithms, acyclic digraphs, and canonical matrices. Any computer program is a causet written in the wrong language. They have extraordinary self-organizing properties. They form a fractal hierarchy of structures when a recently discovered universal functional is minimized. They exhibit a butterfly effect, deterministic chaos, and attractors with potential wells and levels.

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