

Causal diamonds

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1. are defined to be subsets of imbedding space of form $CD \times CP_2$, where CD is defined as diamond-like intersection of future and past directed light-cones and analogous to Penrose diagram and called also causal diamonds since the CP_2 in $CD \times CP_2$ is not relevant for the notion.
2. are assumed to form a hierarchy meaning that
 - (a) there are CDs within CDs - possibly also overlapping CDs.
 - (b) discrete Lorentz boosts and rotations of CDs are allowed with discrete subgroup of Lorentz group indiscrete lattice of the proper time constant hyperboloid question defining hyperbolic 3-manifold as "lattice cell", and possibly having cosmological significance since lattice means quantization of redshifts and distances of astrophysical objects.
 - (c) one can speak about the moduli space of CDs in which particle or any quantal object described by zero energy state has wave function one can speak about the moduli space of CDs in which particle or any quantal object described by zero energy state has wave function crucial for understanding how the arrow and flow of time emerge.
3. to have sizes characterized by the proper time distances between tips of CD quantized as integer multiples of " CP_2 time", which is roughly $10^{3.5}$ Planck times characterizing the time needed to travel a distance defined by CP_2 size with light-velocity.
4. have in the case of elementary particle characterized by p-adic prime p minimal value equal to the secondary p-adic time scale which is p times the CP_2 time.
5. are assumed in the case of elementary particles to have minimal size equal to the secondary p-adic time scale which is p-adic prime p times the CP_2 time scale meaning a connection between elementary particle physics and macroscopic physics. For instance, for electron this time scale is .1 seconds, the fundamental biorhythm corresponding to length scale rather near to circumference of Earth.