On the collapse of the system-wide nearest-neighbour edge length histogram

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Abstract

The collapse of the system-wide nearest-neighbour edge length histogram is considered

1   Collapse of the histogram

Please see Figure 1 for an example system-wide edge length histogram.

Another unbounded system is the black hole event horizon according to the holographic principle.
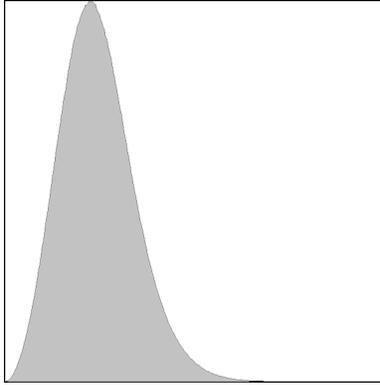
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Figure 1: A system-wide nearest-neighbour tetrahedral edge length histogram for $1,000,000$ pseudorandomly placed vertices along a 3-sphere. The tessellated 3-sphere represents an unbounded system – it is a boundary in and of itself.
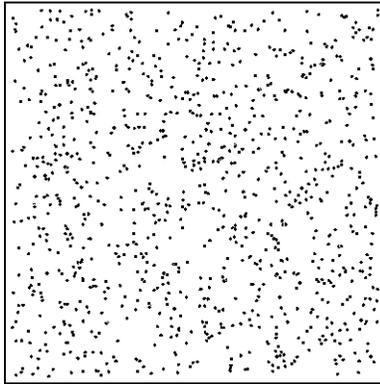

Figure 2: A bounded 'Ludolph' system where the vertices are placed pseudorandomly along a 2-plane. The nearest-neighbour edges are not shown. Unsurprisingly, the edge length histogram, also not shown, is similar to the histogram shown in Figure 1.
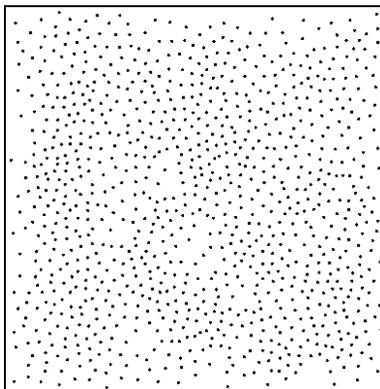

Figure 3: A bounded 'Coulomb' system where the vertices are repulsive, along a 2-plane. The edge length histogram collapses because all nearest-neighbour edges, not shown, have become as uniform as possible in length.