

The Calorimeter Pyramid

Are you interested in a Pyramid Scheme?

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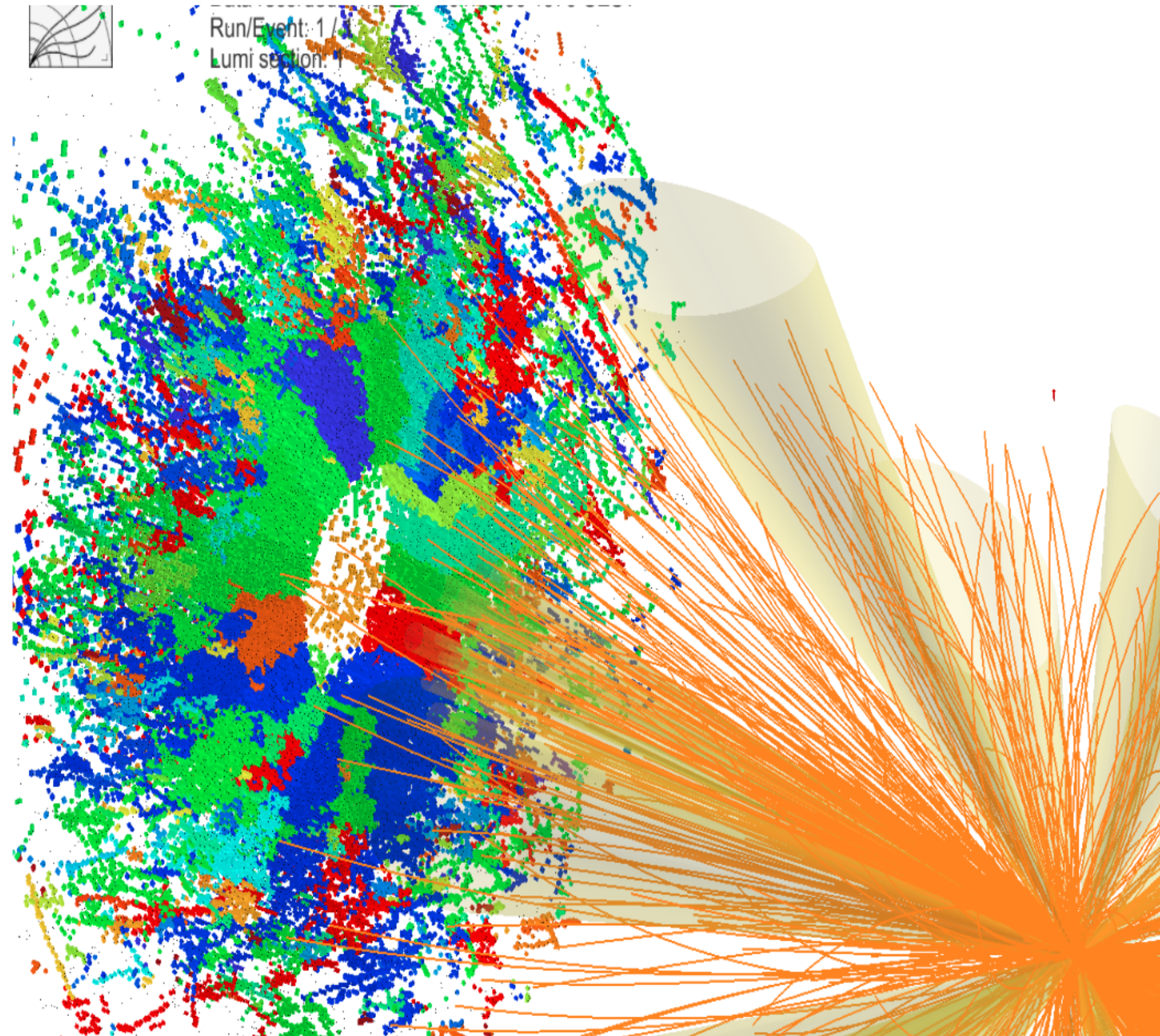
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The Challenge

Modern calorimeters have millions of channels



Simulated view of one HGCal endcap, containing particles from the nominal 140 pileup interaction expected at the HL-LHC
[D. Newbold - [The High-Luminosity Upgrade of the CMS Detector](#)]

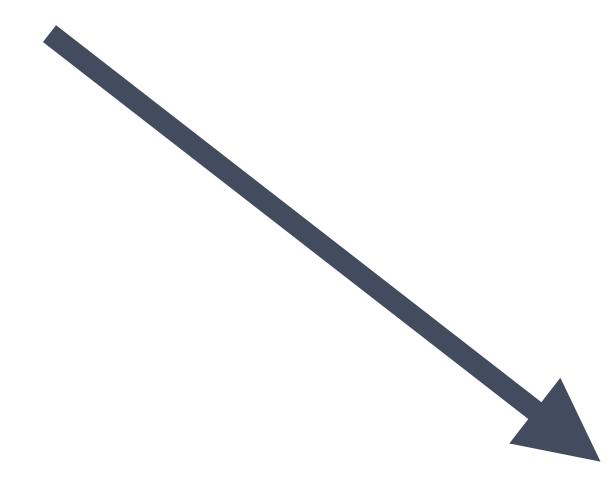
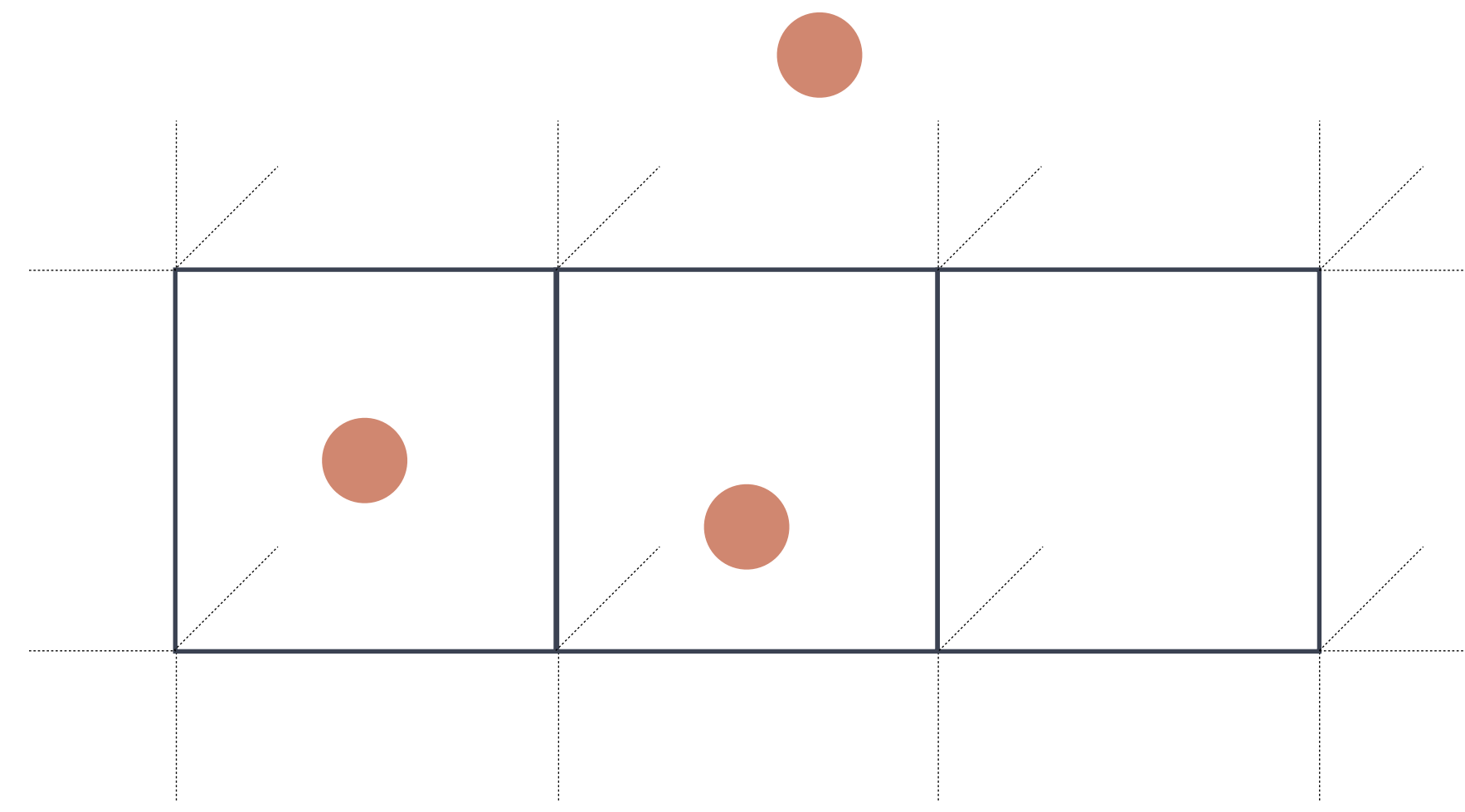
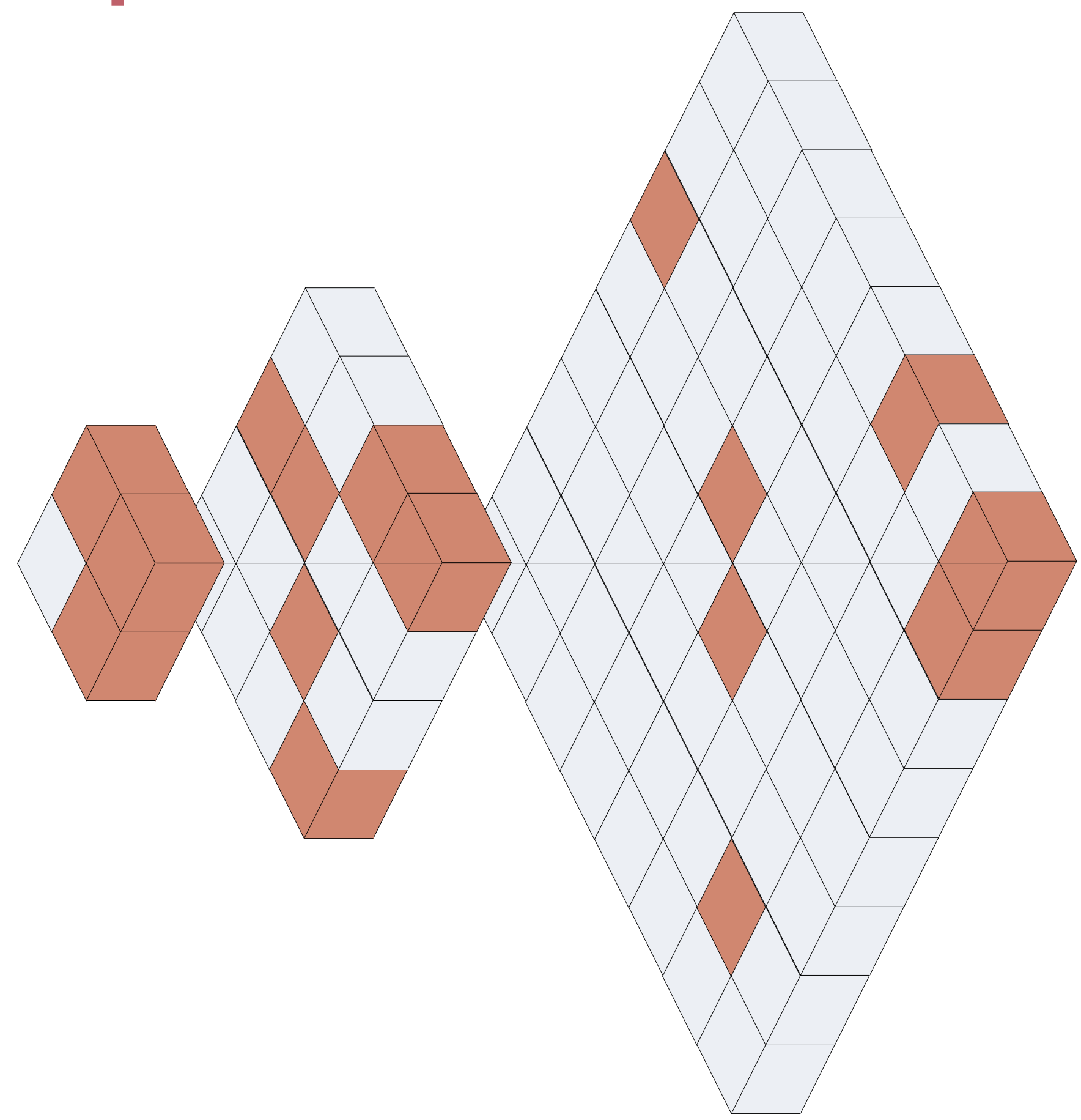
How do you scale generative models to millions of cells?

Two Strategies

Super Resolution

or

Point Clouds



Sparse Super Resolution

The Calorimeter Pyramid

Sparse Super Resolution

First, learn all hit cells → Second, learn the energies of the hits

