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Title: The Gaussian core model in high dimensions

Abstract: In the Gaussian core model, point particles interact via a Gaussian potential function; this system can be viewed as a deformation of the sphere packing problem. In this talk, based on joint work with Matthew de Courcy-Ireland, we'll look at the ground states of the Gaussian core model in high dimensions. When the Gaussian is not too steep, random lattices are provably near-optimal, but the behavior under a steep Gaussian is a mystery. I'll highlight several open problems that seem approachable.