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Exactly Soluble Model for Superfluid Solid? CHIA-REN HU, Texas A&M University — N bosons in a harmonic trap and interacting with each other via a pair-wise repulsive harmonic force is an exactly soluble problem. Could it be an exactly soluble model for superfluid solid? At least the Bose- Einstein condensation of this interacting N-boson system is a fundamentally interesting problem even if it turns out to be only an interacting superfluid. At least the interaction strength can take any value between zero and an upper limit for stability, which would correspond to a strongly interacting system. I have not pushed this problem far enough to state any conclusion here, since the problem is conceived only very recently, but whatever I can find before the meeting time will be reported at the meeting. At least for low N values and/or at T = 0 some results can definitely be obtained, but whether they can be generalized to arbitrary N and finite temperature is unknown at the moment.

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