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Off Diagonal Long Range Order in Low Temperature Solid Helium BRYAN CLARK, University of Illinois Urbana Champaign Physics Department, DAVID CEPERLEY — Experiments have recently produced evidence of the existence of a supersolid ^4He. One of the important properties of equilibrium superfluid/supersolid behavior is the existence of off diagonal long range order, defined in terms of the 1-body density matrix as $\lim_{|r-r'|\to\infty} \rho(r,r') > 0$. Using path integral monte carlo, we calculate the off diagonal density matrix for solid ^4He at temperatures near the experiment and find it is very small at large r.

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