Abstract Submitted
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Strongly interacting quantum phases of polarized dipolar bosons in multi-layered optical lattice BARBARA CAPOGROSSO-SANSONE, University of Oklahoma, ARGHAVAN SAFAVI-NAINI, Massachusetts Institue of Technology, ITAMP, ANATOLY KUKLOV, CSI, CUNY — We present a Quantum Monte Carlo study of dipolar bosons confined in N tubes parallel to each other with the dipole moments polarized perpendicular to the tubes. Each tube represents 1d optical lattice, and no inter-tube tunneling as well as no double-occupation in each tube are allowed. Using a new multi-worm algorithm, the following phases have been found: i) Superfluid of chains, where each chain represents a bound state of N bosons, one from each tube; ii) Checker board solid of chains at 1/2 filling; iii) Independent superfluids in each tube.

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