

Field Induced Spin Supersolidity in Frustrated Spin-1/2 Spin-Dimer Models

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By means of the recently developed algorithm based on the tensor product states, the magnetization process of frustrated spin- $1/2$ spin-dimer models on a square lattice is investigated. Various field-induced quantum phases are discovered. In particular, clear evidence of a supersolid phase over a finite regime of magnetic field is observed. Critical fields at various field-induced transitions are determined accurately. Our work not only implies that the employed numerical technique can be an efficient algorithm even for the frustrated spin systems, but also shed light on the search of the supersolid phase in real frustrated spin-dimer compounds.