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Composite fermion solid and liquid states in two component quantum dots CHUNTAI SHI, Department of Physics, 104 Davey Laboratory, The Pennsylvania State University, Pennsylvania, 16802, GUN SANG JEON, Department of Physics and Astronomy, Seoul National University, Seoul 151-747, Korea, JAINENDRA K. JAIN, Department of Physics, 104 Davey Laboratory, The Pennsylvania State University, Pennsylvania, 16802 — We consider correlated states of a quantum dot, at high magnetic fields, assuming electrons with two components. This model has possible relevance to quantum dots in a bilayer system, a two valley system, in graphene, or for ordinary GaAs based quantum dots in the limit of small Zeeman energy. We show that both the liquid states and crystallites (the latter occurring at large angular momenta) are accurately described in terms of composite fermions. The residual interaction between composite fermions is important, however, and causes complex nearest and next-nearest neighbor spin correlations in the composite fermion crystallite.

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