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Fermi liquid nature of the ground state of multiple-quantum dots in parallel MANAS KULKARNI, Princeton University, ROBERT KONIK, Brookhaven National Laboratory — We argue through a combination of $1/N$ diagrammatic expansion, slave boson mean field theory and the Bethe ansatz that the ground state of multiple quantum dots arranged in parallel is a singlet Fermi-liquid ground state. This conclusion is arrived at by showing the validity of Friedel Sum Rule (a fingerprint of Fermi-liquid physics) and finding that impurity entropy vanishes in the limit of zero temperature (singlet). Our conclusion is in contradiction to other studies that predict a non-Fermi liquid ground state. We discuss possible reasons for this discrepancy.

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