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Transport and correlations in double dots: $1/N$ expansion and SBMFT ROBERT KONIK, Brookhaven National Laboratory, MANAS KULKARNI, Stony Brook University and Brookhaven National Laboratory, ALEXEI TSVELIK, Brookhaven National Laboratory — Large- N diagrammatic and SBMFT approaches are used to study a double dot system in a parallel geometry. We extract fully the pole structure of its Green's function matrix and also obtain the partition function and dot occupancy via diagrams in $1/N$. We show that the Friedel sum rule holds and we use this fact to calculate the conductance. We find that the conductance vanishes at the particle-hole symmetric point. These diagrammatic results agree with our SBMFT analysis for the same system. Through SBMFT, we study how transport properties are affected upon tuning the coupling between the leads and dots. Conductance at finite temperature is also studied. When applicable, we compare our results to a Bethe ansatz analysis of the same system [1]. [1] R.Konik PRL 99, 076602 (2007)

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