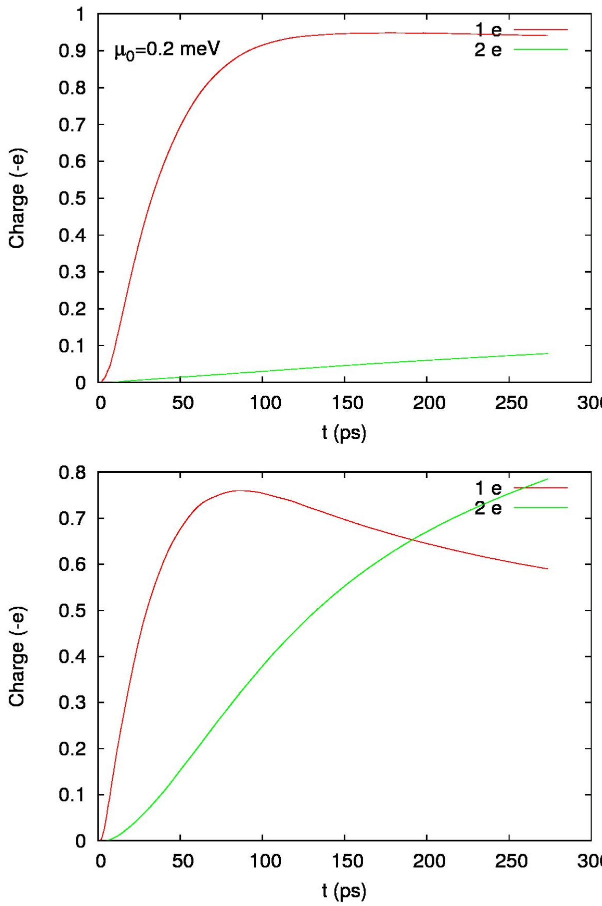

FIG. 10: (Color online) The total charge residing in one- and two-electron states as a function of time for two different values of the bias $\Delta\mu$. $B = 1.0$ T, $L_x = 300$ nm, $\hbar\Omega_0 = 1.0$ meV.

one-electron states are occupied, while for $\Delta\mu = 1.2$ meV initially it is likely to have one-electron states occupied, but very soon the occupation of the two-electron states becomes as probable with the likelihood of the occupation of the one-electron states fast reducing with time. We also have to admit here that even though the steady state value of the total current through the system can be deduced by the values of the current at 270 ps, the charging of the system takes much longer time, since we are using here a very weak coupling to the leads that mimics a tunneling regime.

If we now use the average value of the current in the left and right leads at $t = 270$ ps as a measure of the steady state current we get the information displayed in Fig. 11, where the steady state value of the current is shown for the interacting system as a function of the bias and compared to the charge in the system. We have a clear Coulomb blocking in the interacting system. In the case of a non-interacting system the lack of a gap between the one- and two electron MES and a strong mixing of the energy regimes of two- and three-electron states the two-electron plateau only appears as a small shoulder. The

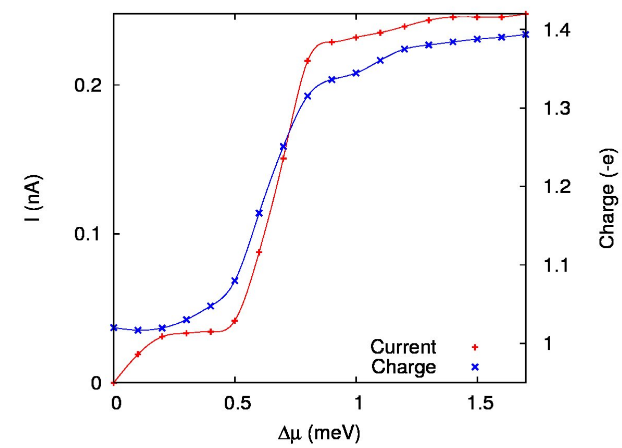

FIG. 11: The total steady state current for interacting 10 SES, and the total charge at $t = 270$ ps. for different values of the bias $\Delta\mu$. $B = 1.0$ T, $L_x = 300$ nm, $\hbar\Omega_0 = 1.0$ meV.

32 MES selected here include no three-electron or MES with higher number of electrons. It should be mentioned here that a different choice of the right bias μ_R can result in the system charging faster and thus at the same time the total current through it being smaller. This comes from the fact that the states have a different coupling to the leads and the time range shown here is very much in the transient- or it's long exponential decay regime.

Figure 12 displaying the current in the right lead gives an idea how the Coulomb blocking plateau appears after the transition regime. The transition regime where the

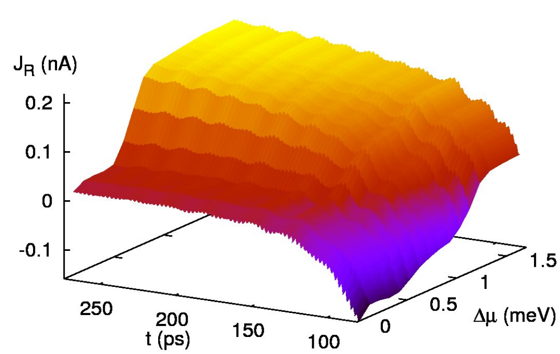

FIG. 12: The total current in the right lead for interacting and non-interacting 10 SES as a function of the bias $\Delta\mu$ and time. $B = 1.0$ T, $L_x = 300$ nm, $\hbar\Omega_0 = 1.0$ meV.

right current goes negative, *i. e.* where it supplies charge to the system is partially truncated from the figure.