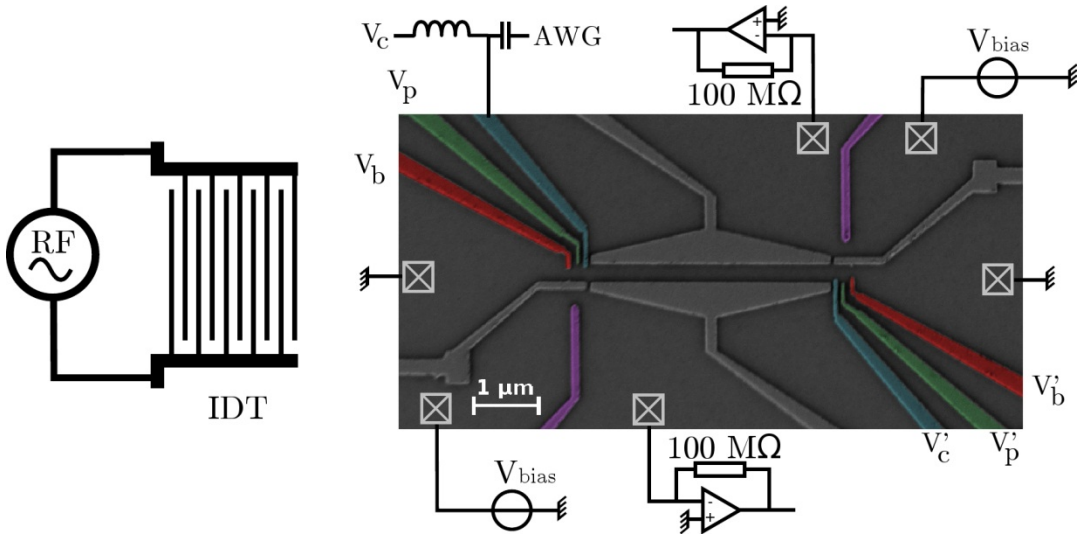

Fig1: Sample used to demonstrate single electron transfer between two distant quantum dots. The interdigited tranducer (IDT) is used to excite the SAW and to generate the SAW moving quantum dots. Single electron spin measurement, measurement of T1 and proof that the coherence can be maintained during transport can be implemented straightforwardly in this sample.

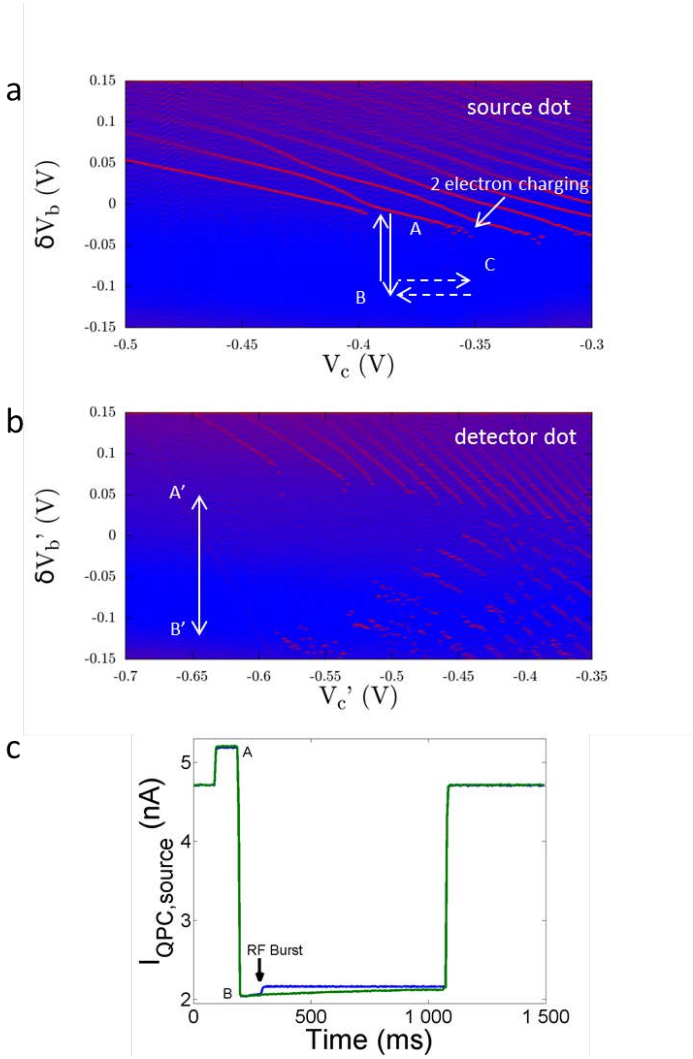

Figure 1 Stability diagrams of the two quantum dots and charge detection a,b, *Stability diagram of the left (a) and the right dot (b) obtained via charge detection by varying the gate Vb(b') and Vc(c'). Sweeps in Vb(b') are fast and are carried out within 1s from +0.15 V to -0.15 V (3ms per point). When the barrier height is made higher (Vb more negative), metastable charge states with timescales longer compared to the Vb(b') sweep time are observed. In the very negative Vb part of the diagram for the right dot, the electrons will finally tunnel out.* ***c,*** *Average QPC time trace along the voltage sequence of the single electron source. Without the MW burst applied on the IDT, we observe a lifetime for the metastable 1 electron charge state of 700ms. Applying a MW burst, the electron in the metastable state is forced to quit the quantum dot with very high probability.*

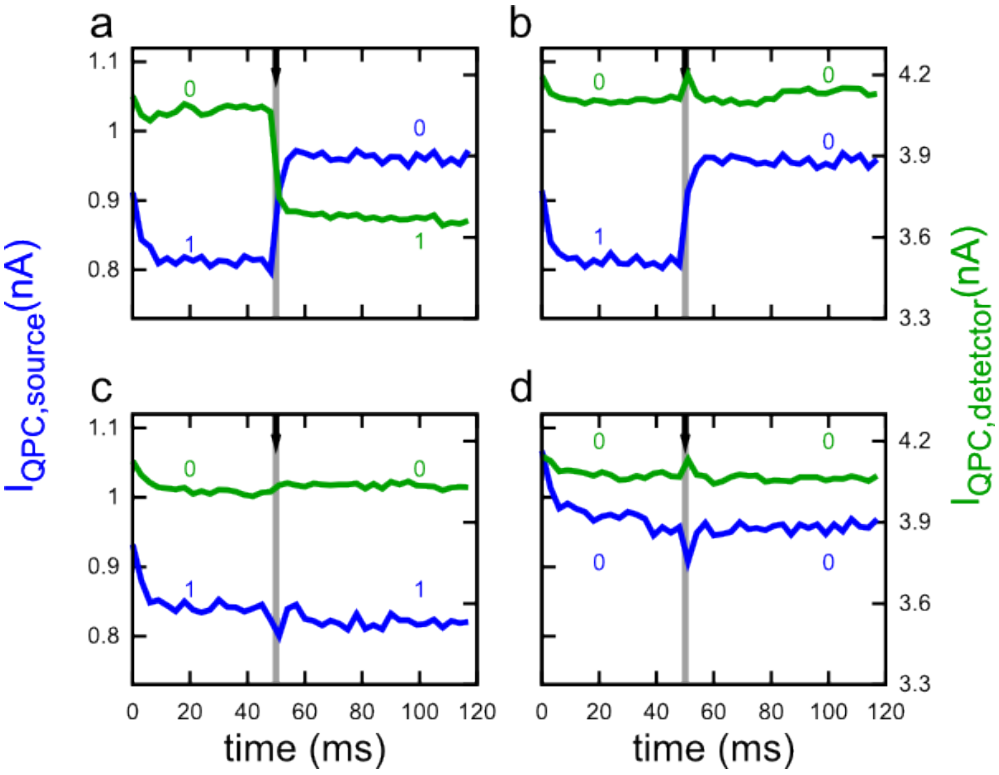

Figure 3 *Typical coincident single shot QPC traces of the source and the detector quantum dot.The panel (a) correspond to the traces where the transfer took place. We obtain these traces in 80% of the case.The three other panel correspond to bad events: (b) the electron has been sent but not detected, (c) the electron was not sent and (d) the initialization of the source dot with one electron failed.*

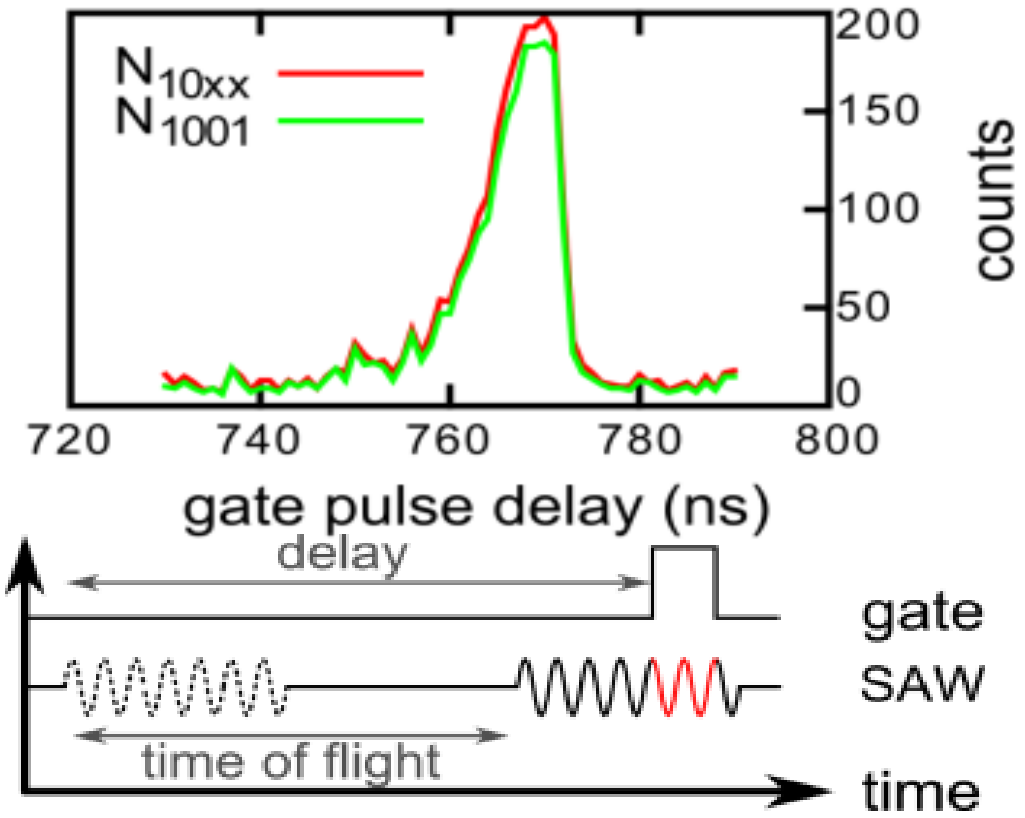

Figure 4 *Evolution of the number of the N1001 and N10xx events as a function of the delay between the 1ns-gate pulse and the 65ns-microwave burst when a single electron is loaded into the single electron source.* ***g****, Schematic description of the timing sequence between 1ns-gate pulse and MW busrt applied on the IDT.*

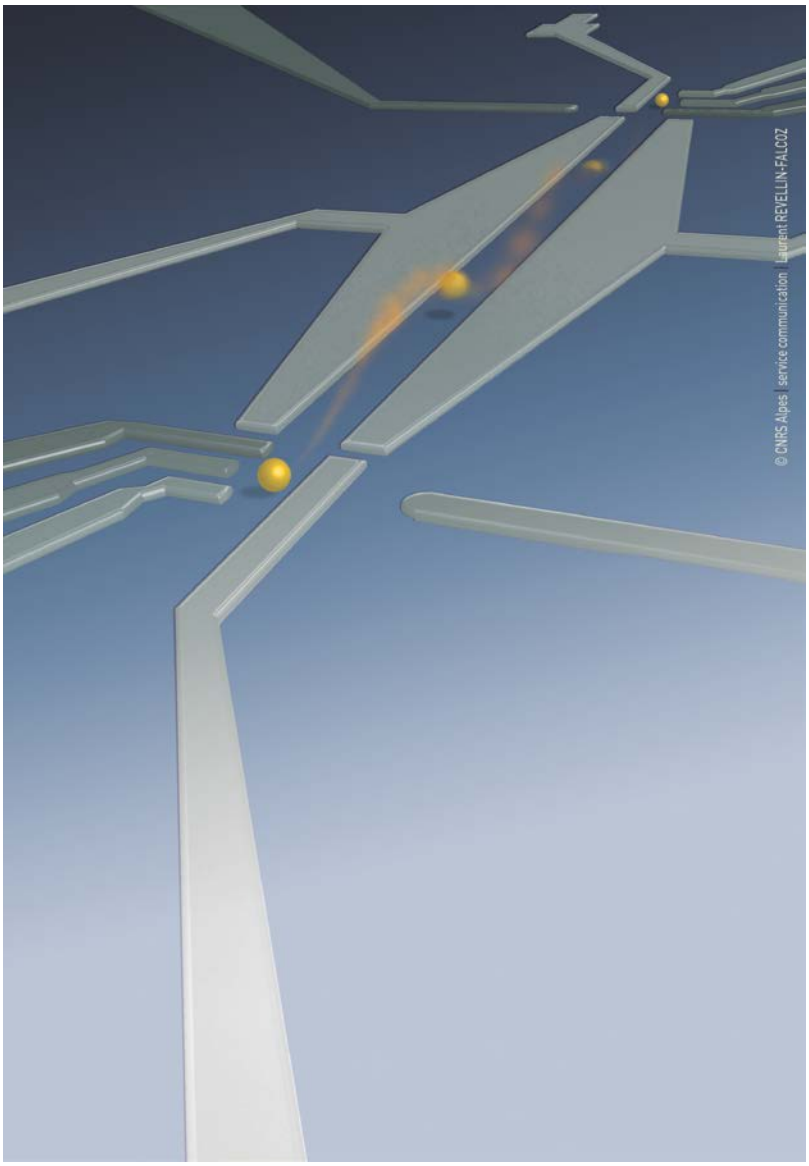

Figure 5 *Artistic view of the single electron transfer between distant quantum dots*