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Orbital Kondo Effect in Fractional Quantum Hall Systems YASHAR KOMIJANI, Univ British Columbia, PASCAL SIMON, University of Paris Sud, IAN AFFLECK, Univ British Columbia — We study transport properties of a charge qubit embedded in series between two chiral Luttinger liquids. This is realized for example by a double anti-dot placed between the edge states of the integer $\nu = 1$ or fractional $\nu = 1/3$ quantum Hall systems. We show that in the limit of a large capacitive coupling between the anti-dots, their quasi-particle occupancy behaves as a pseudo-spin which realizes an orbital Kondo impurity embedded in a Luttinger liquid, while the inter anti-dot tunnelling acts like an impurity magnetic field. The latter tends to destabilize the Kondo fixed point at $\nu = 1/3$ and produce an effective inter-edge scattering, as in quasi-particle tunnelling in quantum point contacts. We relate the backscattered conductance to the spin relaxation of the Kondo impurity, i.e. the imaginary part of pseudo-spin susceptibility and calculate it in various limits for both $\nu = 1$ and $\nu = 1/3$.

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