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Boundary controllability of Schrodinger and beam equation with an internal point mass

I'll describe some boundary control results for a Schrödinger equation on the domain $(-1,0)\cup(0,1)$ with a singular transmission condition at $x=0$:

$$\begin{cases} u_t + iu_{xx} = 0, & x \in (-1,0)\cup(0,1),\ t>0 \\ u(0^-,t) = u(0+,t) & t>0 \\ \frac{d}{dt}u(0,t) + i[u_x(0^+,t) - u_x(0^-,t)] = 0 & t>0 \\ u(-1,t) = 0, & t>0 \end{cases}$$

with either Dirichlet control : $u(1,t) = f(t)$, or Neumann control: $u_x(1,t) = f(t)$. In the Neumann case, we find results analogous to known results for the wave equation, in which exact controllability holds on a space with differing regularities on each side of the interface. This is not the case however in the case of Dirichlet control, where the controllability space is the same on each side. Some general results (for non-symmetric domains) will also be described. Related null-controllability results for the Euler-Bernoulli equation will also be discussed.