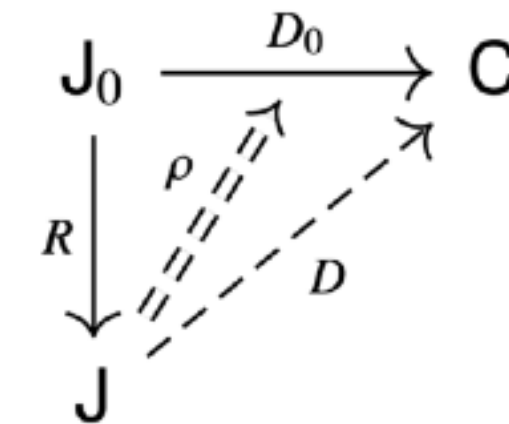


# BVPs (and IVPs)

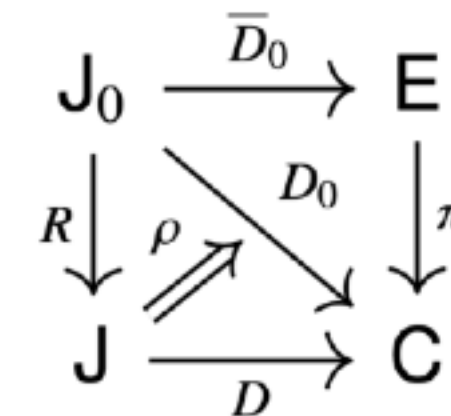
Pretty important for actually solving and modelling stuff

- An **extension** of a diagram  $D_0: \mathcal{J}_0 \rightarrow \mathcal{C}$  along a functor  $R: \mathcal{J}_0 \rightarrow \mathcal{J}$  is a diagram  $D: \mathcal{J} \rightarrow \mathcal{C}$  and a (backwards) morphism  $(R, \rho): (\mathcal{J}, D) \rightarrow (\mathcal{J}_0, D_0)$

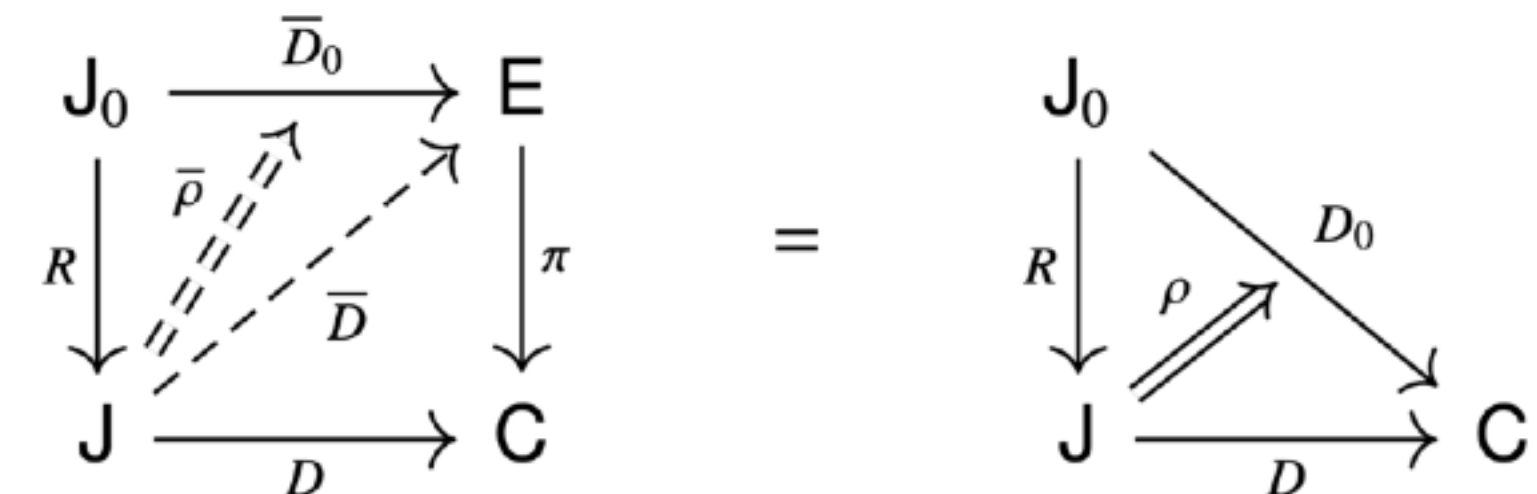


- Given

- an extension of  $D_0$  along  $R$
- a lift  $\bar{D}_0$  of  $D_0$  through some functor  $\pi: \mathcal{E} \rightarrow \mathcal{C}$



the **extension lifting problem** is to find an extension  $(R, \bar{\rho}): (\mathcal{J}, \bar{D}) \rightarrow (\mathcal{J}_0, \bar{D}_0)$  of  $\bar{D}_0$  along  $R$  such that  $\bar{D}$  is a lift of  $D$  through  $\pi$  in a “2-compatible way”



# BVPs (and IVPs)

Pretty important for actually solving and modelling stuff

- $D$  represents the whole system
- $D_0$  represents the boundary of the system
- $D \rightarrow D_0$  projects the system onto its boundary
- A lift  $\overline{D}_0$  of  $D_0$  is a choice of boundary data
- N.B. unlike in “classical” algebraic topology, we allow extension-lifting problems to be non-strict, i.e. to have non-trivial 2-cells