Constituent components of diffusion

Understanding equations as conjunctions of principles

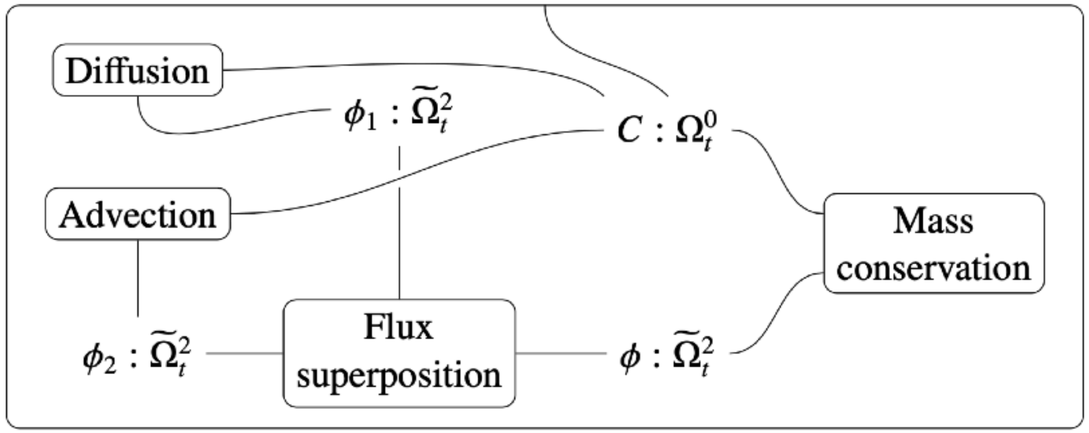
- Now we can extend or replace *individual components*
- E.g. to describe advection instead of diffusion, we can just plug a different diagram into the “Transport flux” box: replace Fick’s first law with one that describes flux due to advection along a moving field

$$\begin{array}{ccc} C : \Omega_t^0 & \xrightarrow{\star} & \widetilde{C} : \widetilde{\Omega}_t^3 \\ & & \Big\downarrow{\scriptstyle -\iota_{\mathbf{v}}} \\ & & \phi : \widetilde{\Omega}_t^2 \end{array}$$

Constituent components of diffusion

Understanding equations as conjunctions of principles

- Even better, we don't just have modularity, but also *hierarchicality* [sic]
- *Two levels*: combine diffusion with advection by operadic composition of UWDs



Composition pattern for advection-diffusion

- *Three levels*: advection-diffusion-reaction