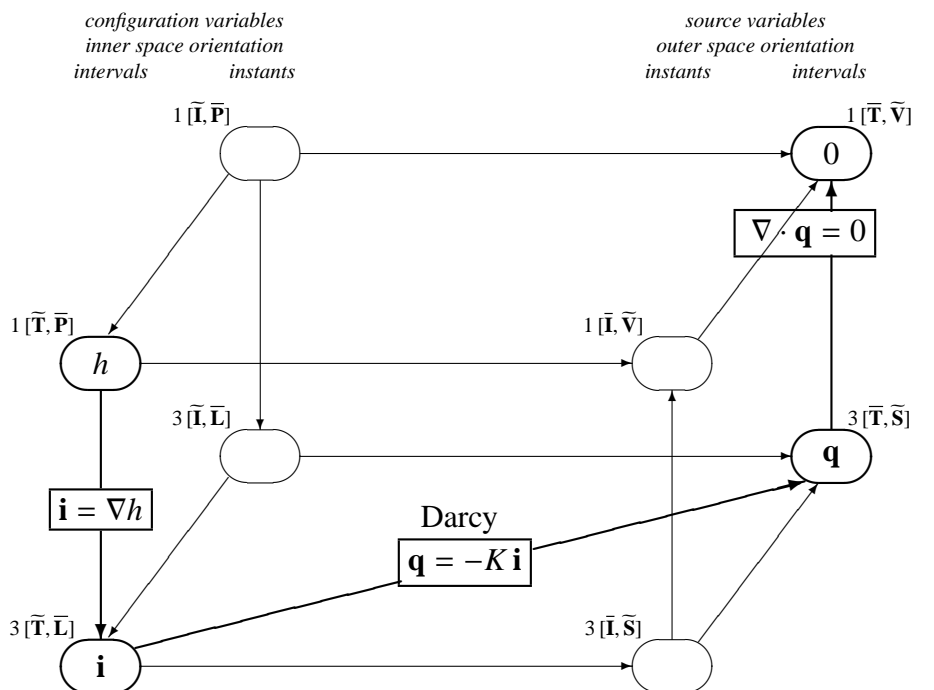
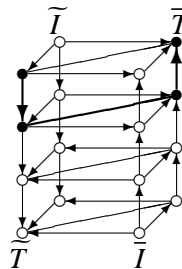


## Hydraulics: percolation in porous media



$$h = \frac{v^2}{2g} + \frac{p}{\rho g} + z \qquad K = \frac{k \rho g}{\mu}$$

- |   |   |
|---|---|
| $\frac{v^2}{2g}$ velocity head (m)<br>$\frac{p}{\rho g}$ pressure head (m)<br>$z$ elevation (m)<br>$h$ total hydraulic head (m)<br>$g$ acceleration of gravity ( $\text{m s}^{-2}$ )<br>$\mathbf{i}$ hydraulic gradient (1) | $\mathbf{q}$ volumetric current density ( $\text{s}^{-1}$ )<br>$\rho$ density ( $\text{kg m}^{-3}$ )<br>$K$ hydraulic conductivity ( $\text{m s}^{-1}$ )<br>$k$ permeability ( $\text{m}^2$ )<br>$\mu$ fluid absolute viscosity ( $\text{N s m}^{-2}$ ) |
|---|---|



total head = Ma-Ru. (carico effettivo)  
 Ref.: Marchi E, Kubatta A., Meccanica dei fluidi, Utet, 1981  
 Ref.: Daugherty R.L., Hydraulics, Mc.Graw-Hill, 1937  
 FLd7-7; <http://discretephysics.dica.units.it>

see also Table FLd4