Equations

https://camillejr.github.io/science-docs/

1 PC-transport

$$\rho\frac{D\phi}{Dt} = \mathbb{D}\nabla^2\phi + S_\phi$$

$$S_\phi(\phi) = f(T, p, Y_1, \ldots, Y_{N_S-1})$$

$$\rho\frac{D\boldsymbol{\Phi}}{Dt} = -\nabla(\boldsymbol{j}_\Phi) + \boldsymbol{s}_\Phi$$

$$\rho\frac{D\boldsymbol{z}}{Dt} = -\nabla(\boldsymbol{j}_z) + \boldsymbol{s}_z$$

$$\rho\frac{\partial\boldsymbol{\Phi}}{\partial t} + \rho\vec{V}\cdot\nabla\boldsymbol{\Phi} = \mathbb{D}_\Phi\nabla^2\boldsymbol{\Phi} + \boldsymbol{S}_\Phi$$

$$\rho\frac{\partial\mathbf{z}}{\partial t} + \rho\vec{V}\cdot\nabla\mathbf{z} = \mathbb{D}_z\nabla^2\mathbf{z} + \boldsymbol{S}_z$$

$$\mathbf{z} = \boldsymbol{\Phi}\mathbf{A}_\mathbf{q}$$

2 Regression

$$\boldsymbol{\Phi} = [T, p,]$$

$$\boldsymbol{\Phi} \approx f_\Phi(\boldsymbol{Z}_q)$$

$$\boldsymbol{\Phi} \approx N(0, \sigma_n^2)$$

$$\boldsymbol{\Phi} \approx N(0, \boldsymbol{K}(\boldsymbol{Z}_p, \boldsymbol{Z}_q) + \sigma_n^2\boldsymbol{I})$$

3 Arrhenius law

$$k = Ae^{\frac{-E_a}{RT}}$$

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$$k = AT^n e^{\frac{-E_a}{RT}}$$