

Kind of nonlinear PDE I want to solve:

$$\frac{\partial C}{\partial t} = d_1(x) \frac{\partial^2 C}{\partial x^2} + d_2(x) \left(\frac{\partial C}{\partial x} \right)^2 + F(x, t) \quad (1)$$

Test 1 (ok):

$$\frac{\partial C}{\partial t} = d_1 \frac{\partial^2 C}{\partial x^2} \quad (2)$$

Test 2 (ok):

$$\frac{\partial C}{\partial t} = d_1 \frac{\partial^2 C}{\partial x^2} + F(x) \quad (3)$$

where

$$F(x) = 0.4 \left(\frac{x}{LL} \right)^2 - \frac{1}{2} \left(\frac{x}{LL} \right) + 0.2$$

Test 3 (ok):

$$\frac{\partial C}{\partial t} = d_1 \frac{\partial^2 C}{\partial x^2} + F(x, t) \quad (4)$$

$$F(x, t) = \left[0.4 \left(\frac{x}{LL} \right)^2 - \frac{1}{2} \left(\frac{x}{LL} \right) + 0.2 \right] \frac{t}{10}$$

All these example were solved using Neumann BC.

I'm not able to do the following:

- Dirichlet BC
- nonlinear terms
- system of PDEs