Solving the Berger Equation as a wave Equation

$$\frac{\partial \phi}{\partial t} + \phi \frac{\partial \phi}{\partial x} = d \frac{\partial^2 \phi}{\partial x^2}$$

Equation 1 - Berger Equation

Since the solution is a wave Equation:

$$\phi(x,t) = f(x - Vt)$$

$$y = x - Vt$$

$$\frac{\mathrm{df}}{\mathrm{d}y} = \frac{1}{d}\left(-Vf + f^2\right)$$

Equation 2 - The Berger Equation as a wave Equation

Characteristics of the simulated Equation:

$$d = 0,01 \qquad x \in [0,1]$$

Boundary conditions:

$$\frac{\partial \phi}{\partial t}(1,t) = e^{-2t} \qquad \phi(0,t) = 0$$

Initial conditions:

$$\phi(x,0) = e^{-16(t-0.5)^2} - e^{-4}$$