Notations

The following notations are used in this note:

- Partial Derivatives

$$\partial_t u = \frac{\partial u}{\partial t} = u_t, \quad \partial_t^2 u = \frac{\partial^2 u}{\partial x^2} = u_{tt}$$

- Laplacian

$$\nabla^2 \equiv \nabla \cdot \nabla$$
$$\nabla^2 u = \partial_x^2 u + \partial_y^2 u + \partial_z^2 u = u_{xx} + u_{yy} + u_{zz}$$