# Statement of Laplace's Eq.

The eq. (PDE)

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$$

or $u_{xx} + u_{yy} = 0$

is Laplace's equation. It is the diffusion equation. many physical quantities diffuse. e.g., heat, chemicals, fluids.

Solutions $u(x, y)$ of Laplace's eq. give the equilibrium distributions of heat, concentration, or velocity at the point $(x, y)$, depending on the problem domain and conditions at the boundary of the domain. "Equilibrium" means unchanging in time.