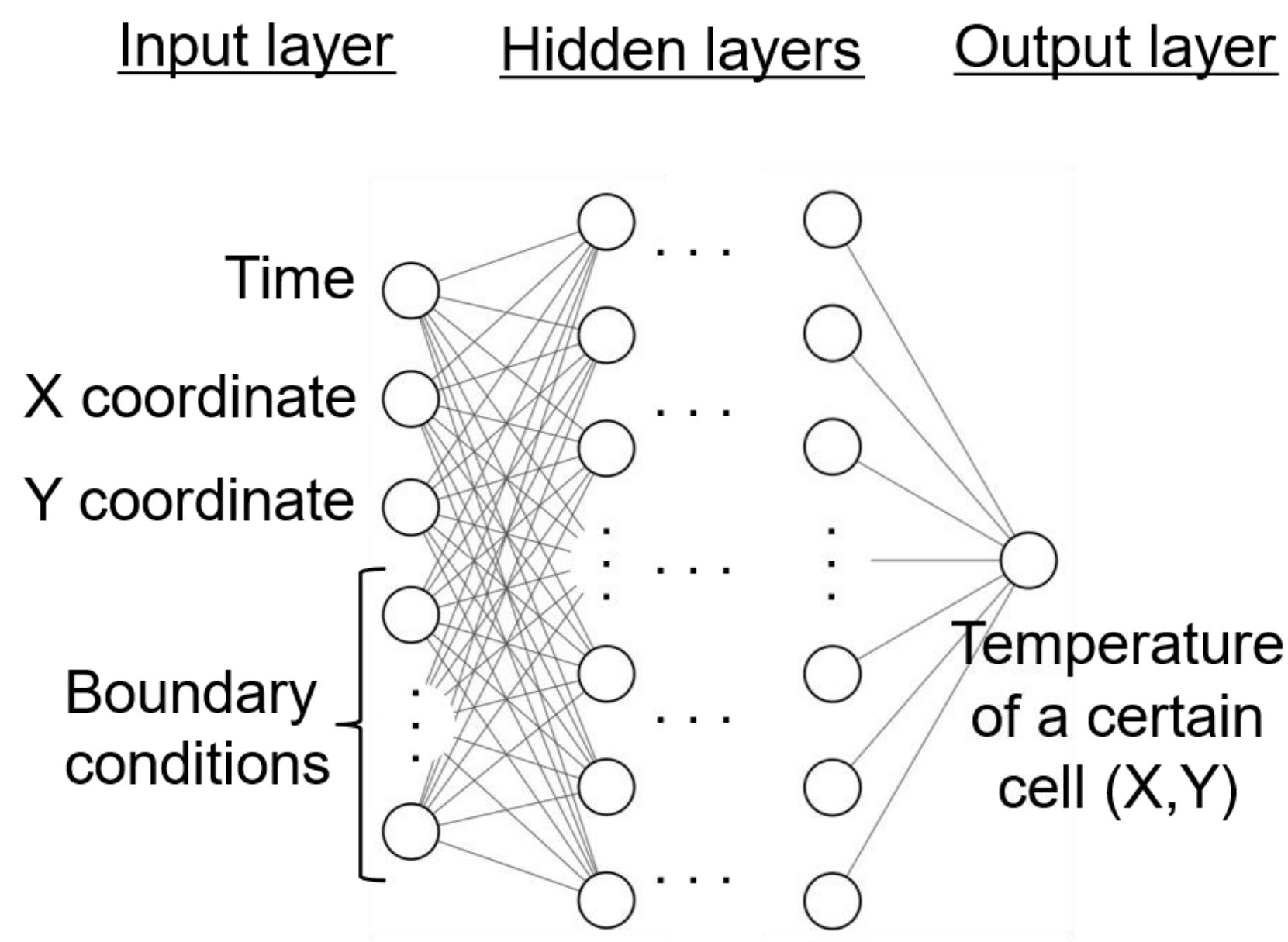


深層学習による室内気流手法の開発

物理情報ニューラルネットワークによる流れ場再構築と非定常予測

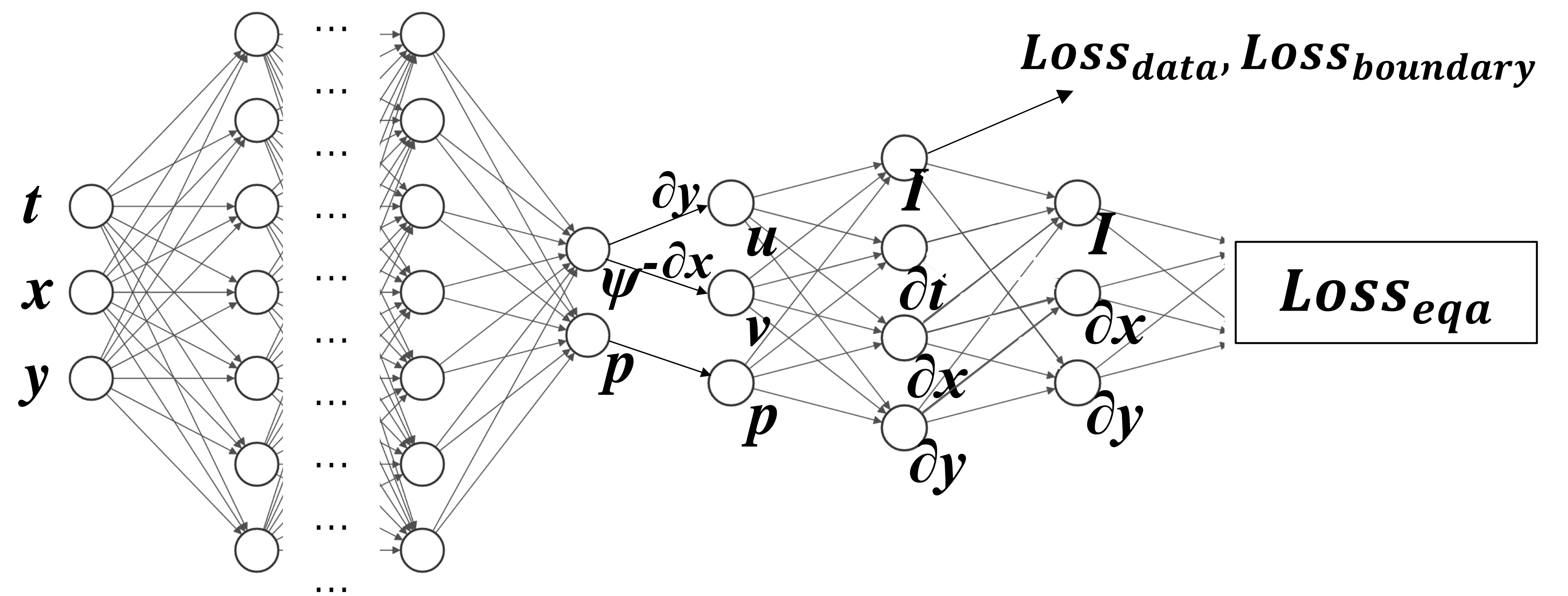
研究背景

Neural Network



- ▲ high modeling ability
- ▲ high speed calculation with high accuracy

問題点: 非物理的な結果がある

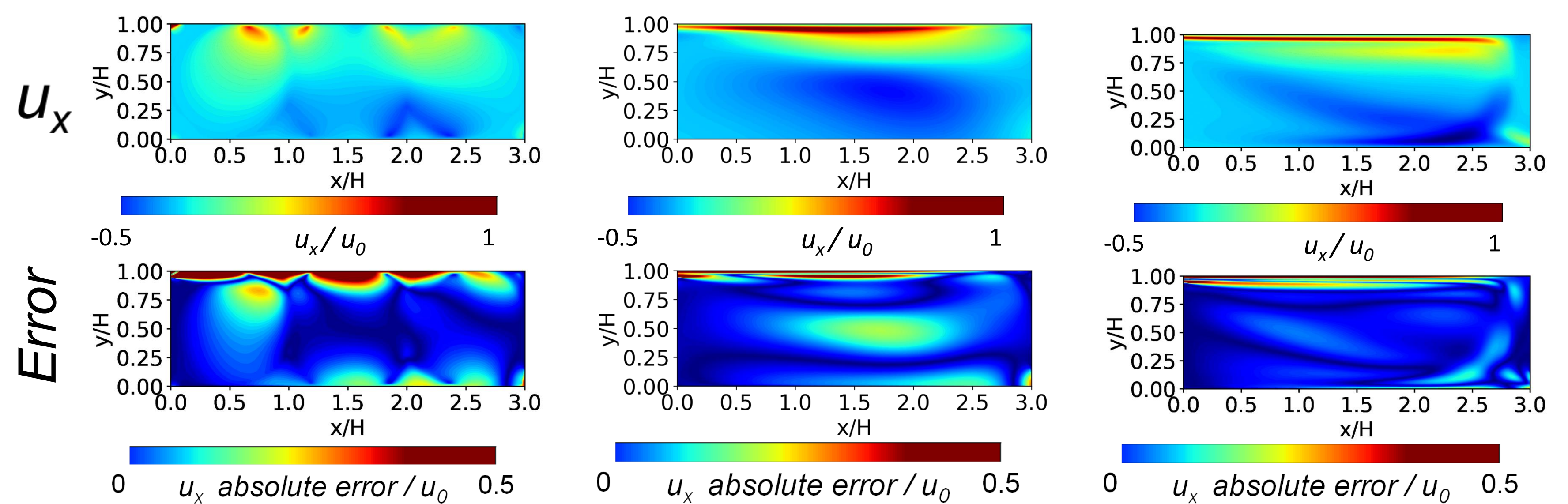
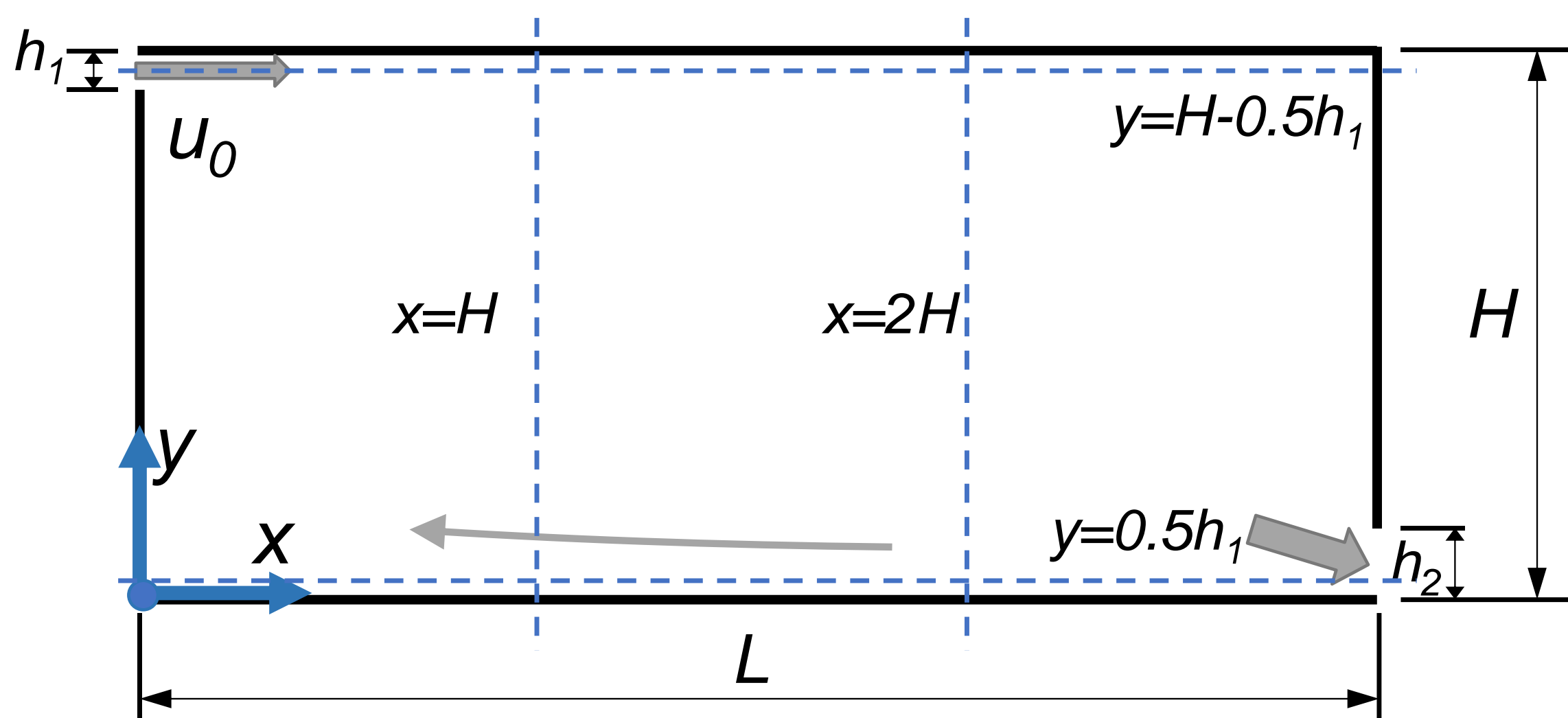


* I is the original value

$$\mu_j \frac{\partial u_i}{\partial x_j} = -\frac{\partial p}{\rho \partial x_j} + \frac{\partial}{\partial x_j} \left(\nu \frac{\partial u_i}{\partial x_j} \right) - g_i \beta (T - T_0)$$

解決策: 物理情報ニューラルネットワークを導入する

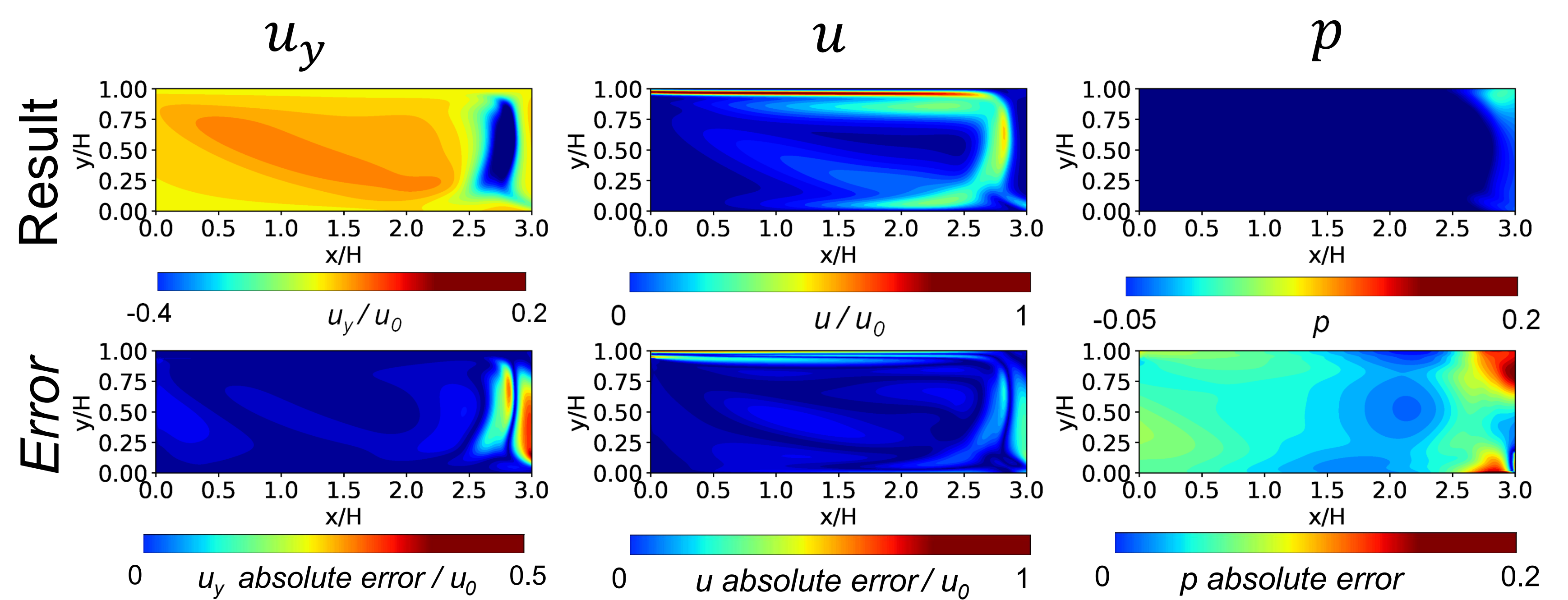
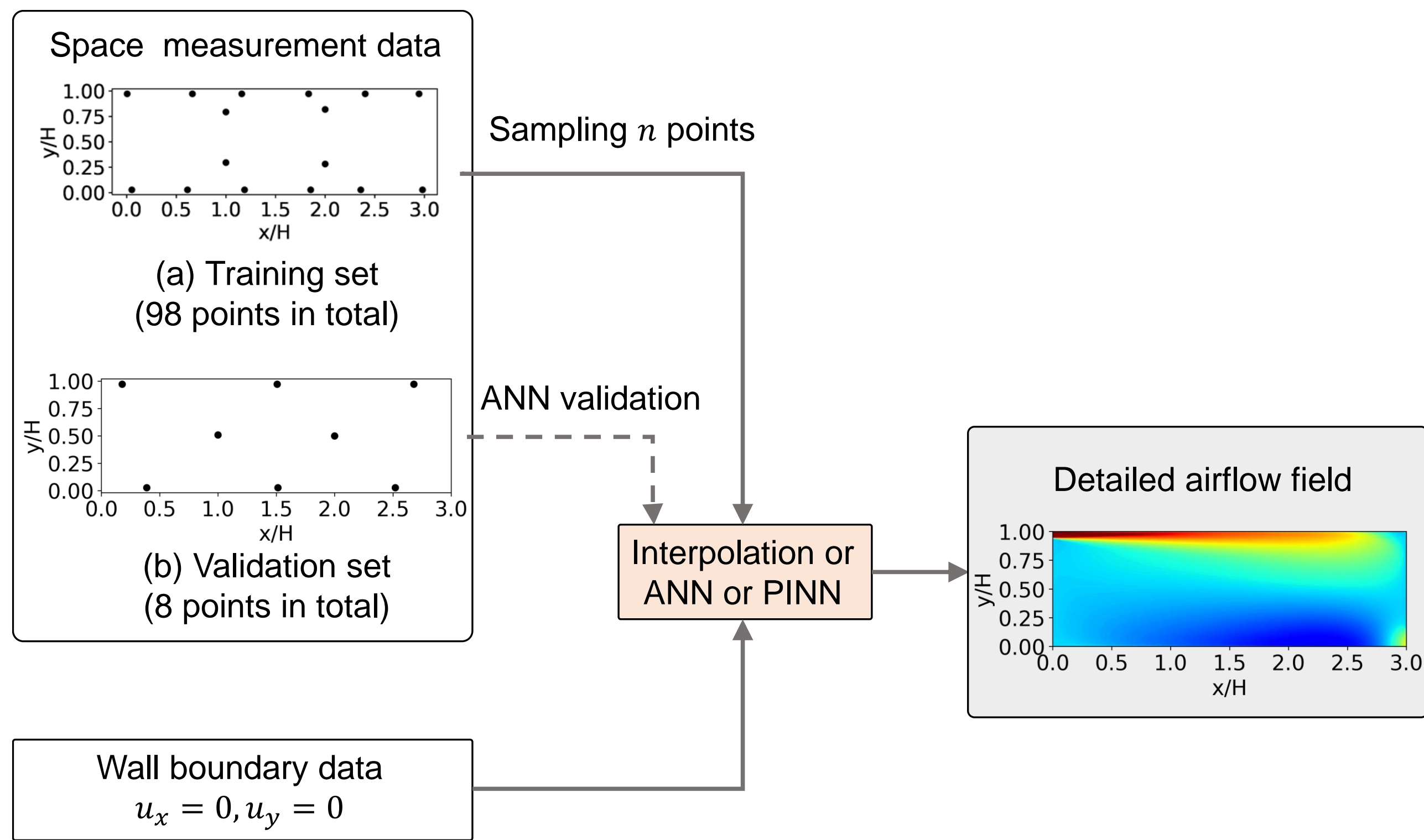
定常流れ場再構築



Space interpolation

ANN

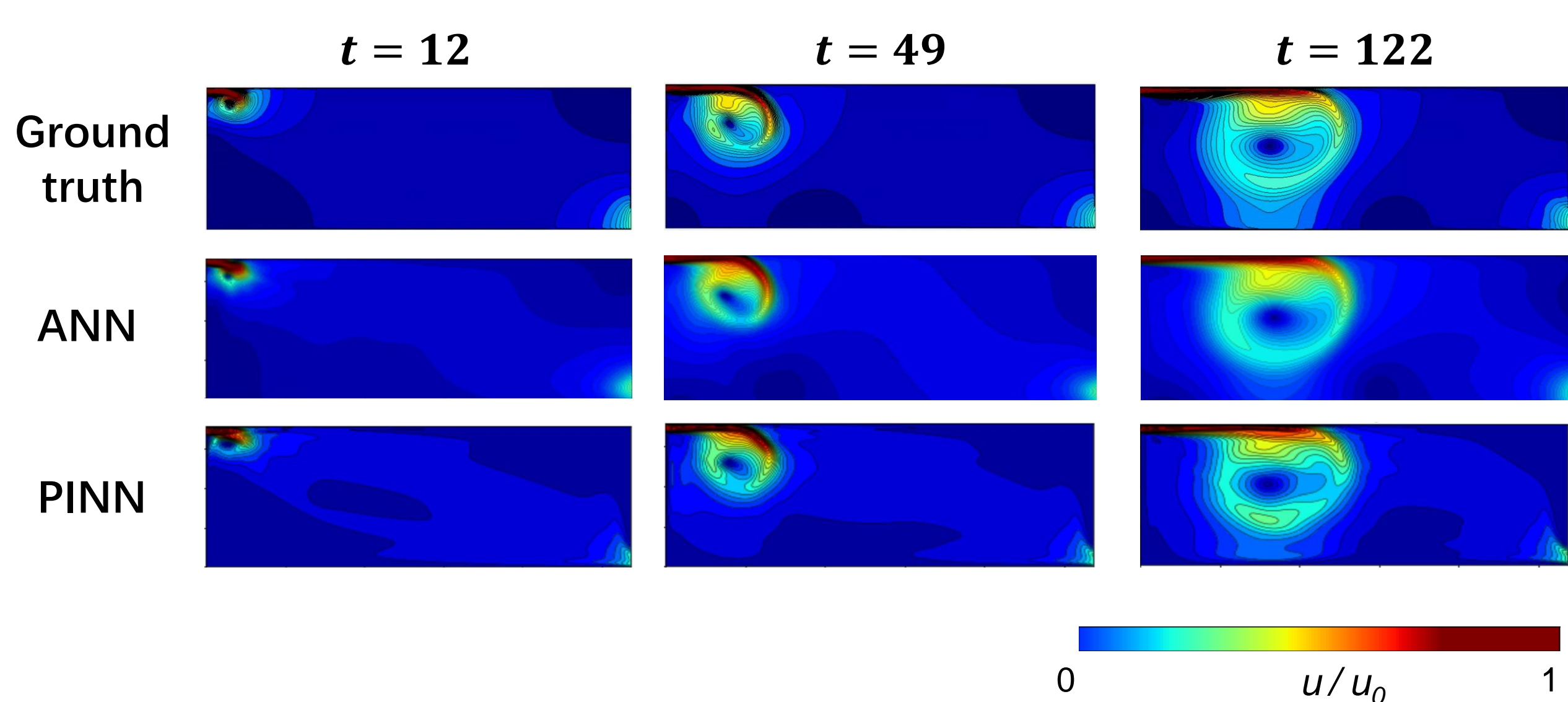
PINN



PINN

非定常流れ場予測

Training



Testing

