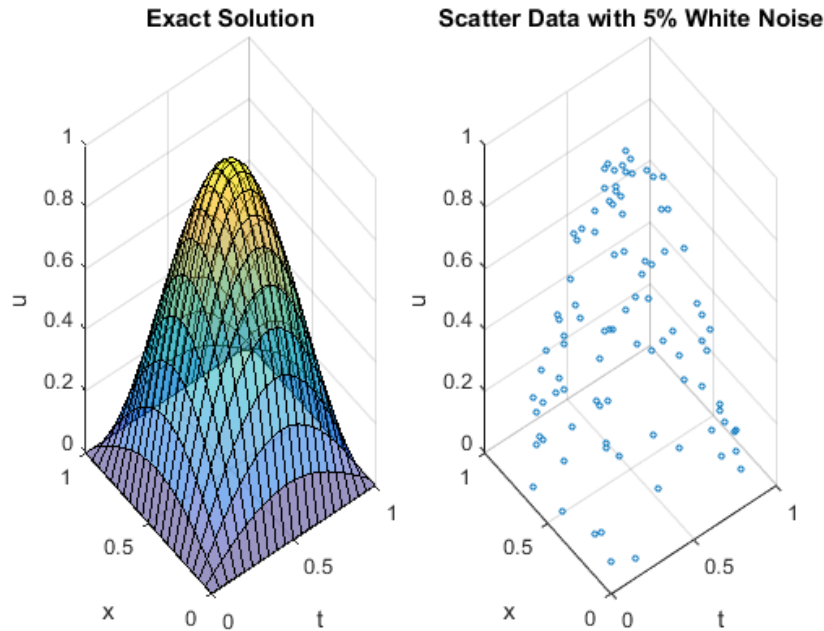


Deep Learning Approach of Physical Model Regression

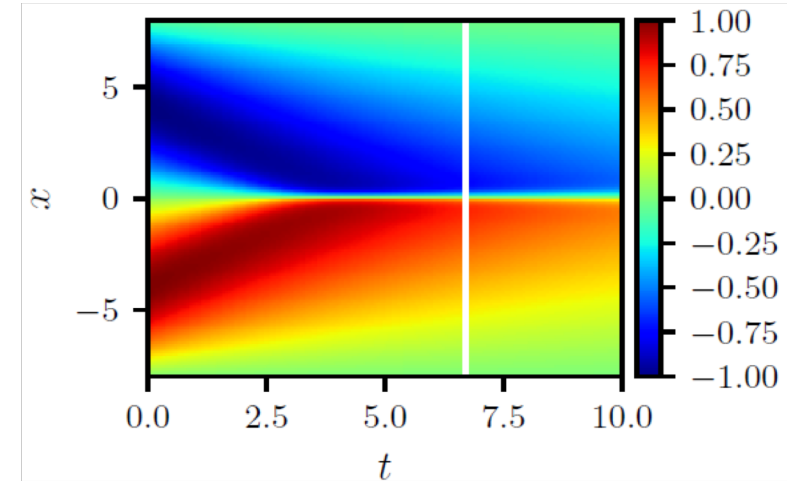
Qinfeng Zhu, Tianyu Zhang



$$u_t = N(t, x, u_x, u_{xx})$$

$$f(t^i, x^i) = u_t - N(t, x, u_x, u_{xx})$$

$$SSE = \sum_{i=1}^N w_u^i |u(t^i, x^i) - u^i|^2 + w_f^i |f(t^i, x^i)|^2$$



(M. Raissi 2018)

Burger's equation: $u_t = -uu_x + 0.1u_{xx}$

L^2 error of numerical results

	clean data	1% noise	2% noise	5% noise
Raissi's	4.78e-03	2.64e-02	1.09e-01	4.56e-01
Ours	9.96e-04	2.21e-03	4.20e-03	1.04e-02