$$r = \left[U \cdot (r_{\max}^{1-\gamma} - r_{\min}^{1-\gamma}) + r_{\min}^{1-\gamma}\right]^{1/(1-\gamma)} = \left[U \cdot (r_{\max}^{0.3} - r_{\min}^{0.3}) + r_{\min}^{0.3}\right]^{1/0.3}$$

$$f(x) = \begin{cases} x^2 - 2e^{-3000(x+0.5)^2}, & -1 \le x \le 0, \\ \sin(10\pi x) + 1, & 0 < x \le 1. \end{cases}$$

$$\mathcal{L}_{\text{PDE}} = \frac{1}{2N_{\text{coll}}} \sum_{i=1}^{N_{\text{coll}}} \lambda(t_i, x_i) \cdot f(t_i, x_i)^2,$$

$$\mathcal{L}_{\text{grad}} = \frac{1}{2N_{\text{coll}}} \sum_{i=1}^{N_{\text{coll}}} \lambda(t_i, x_i) \cdot f_x(t_i, x_i)^2,$$

$$\mathcal{L}_{\text{IC}} = \frac{1}{2N_{\text{IC}}} \sum_{j=1}^{N_{\text{IC}}} \lambda(0, x_j) \cdot [u(0, x_j) - u_0(x_j)]^2,$$

$$\mathcal{L}_{\text{BC}} = \frac{1}{N_{\text{BC}}} \sum_{k=1}^{N_{\text{BC}}} [u(t_k, 0) - u(t_k, 1)]^2.$$

Conversation

with

Prof George Karniadakis

Oppenheim Lecturer 2026 | Faculty of Science, Distinguish Visitor



Prof George Karniadakis

Charles Pitts Robinson and John Palmer
Barstow Professor of Applied Mathematics
Brown University, USA

14 August, Fri
4:15pm - 5:45pm
Mathematics Lounge, S17-04-07

NUS National University of Singapore | Department of Mathematics Faculty of Science | IMS Institute for Mathematical Sciences