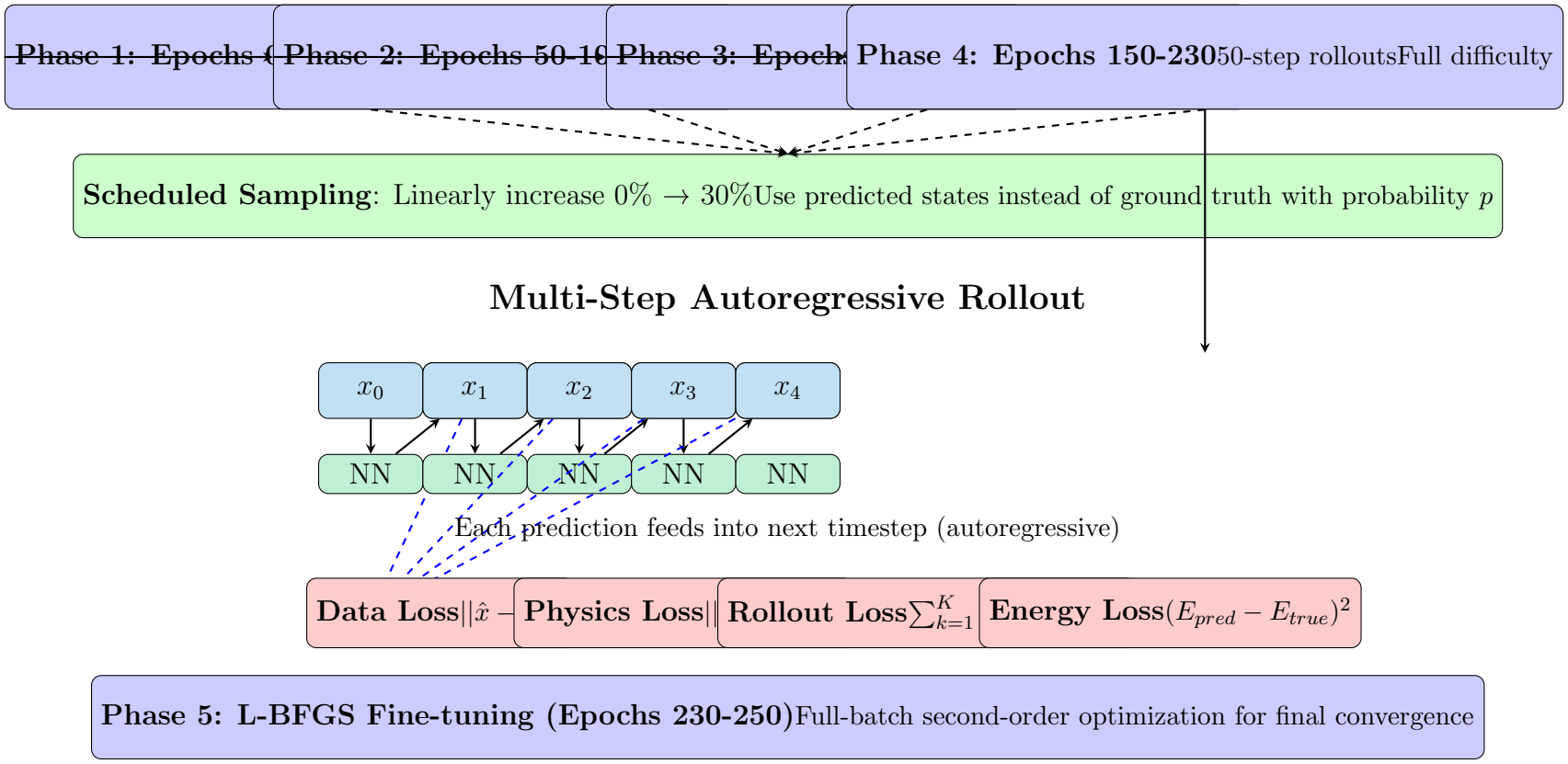
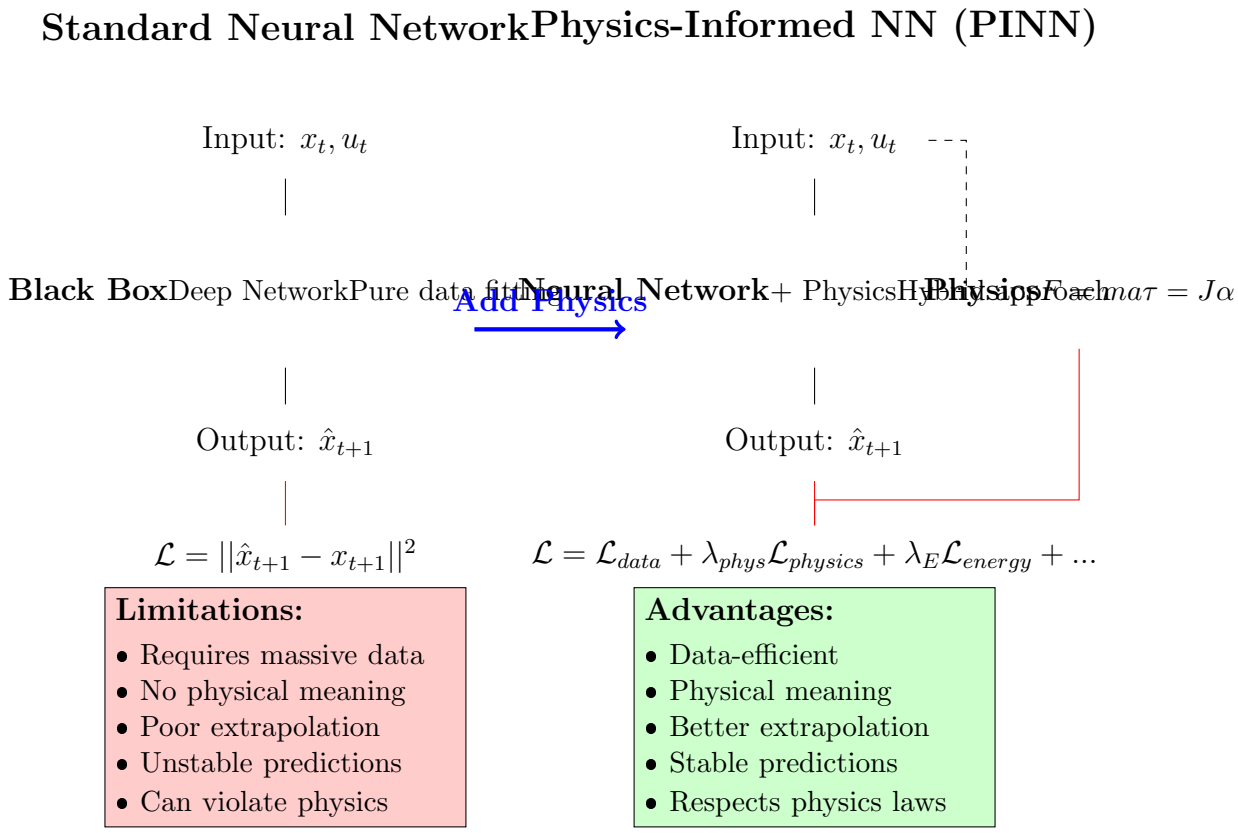
Training Pipeline: Curriculum Learning & Multi-Step Rollout

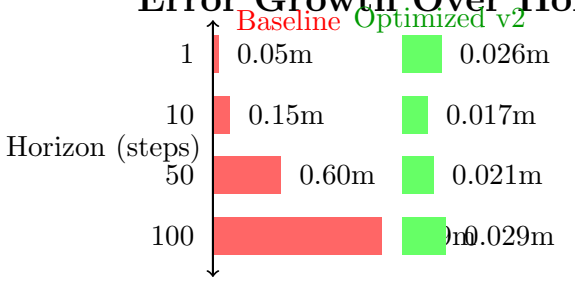


Standard Neural Network vs Physics-Informed Neural Network

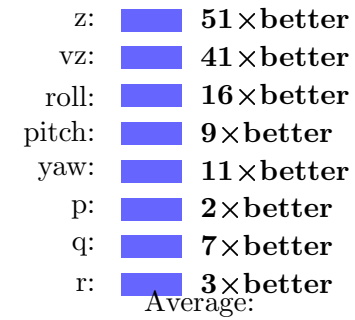


PINN v2 Performance: Holdout Test Set Results

Error Growth Over Horizon



Improvement Factors



Key Achievement:

100-step horizon: 0.029 m error (vs 1.49 m baseline)

51× improvement

complete

Stability Metric:

Error growth baseline: 17×
Error growth optimized: 1.1×

15× more stable!

Physics Accuracy:

Mass error: 0%
Motor coeffs: 0%
Inertias: ¡5% error