Physics-Guided Sim2Real Framework

Physics Modeling
(Multipath, Human, Environment)

Synthetic CSI Generator
(Parameterized, Caching)

Enhanced Model
(CNN + SE + Attention)

Synthetic Robustness (SRD)
540 configurations

CDAE
LOSO / LORO

STEA
Label Efficiency
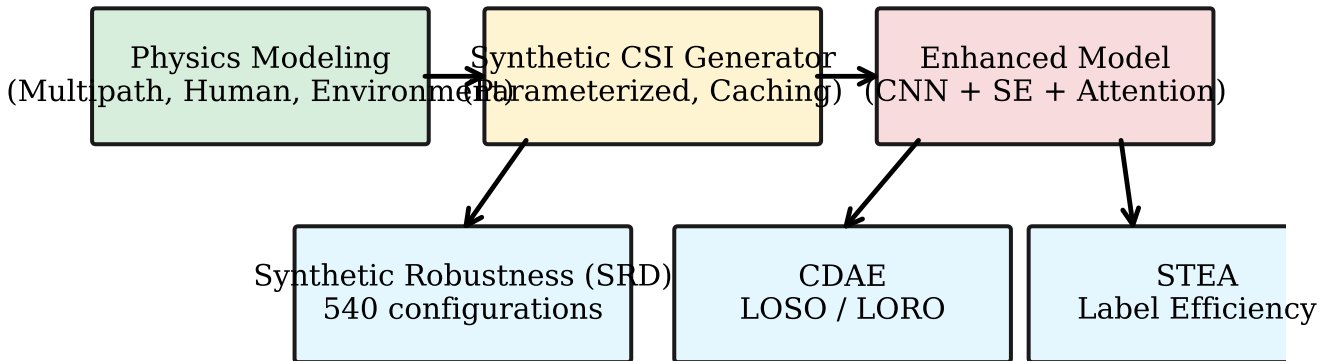
Key Results: 83.0±0.1% (LOSO=LORO); 82.1% @ 20% labels; ECE=0.0072