(a)

FLAGSHIP: Dilated Conv (No Attention)

COMSOL Parameters x
material/transport/interface

Scalar TXT In
external, swappable

Preprocessing log1p/robust/minmax 8-point PCHIP
100k+300k source sets
66k + 176k usable

ParamMLP 256 → 128 → RBF(V) encoding

Conv1d: $k = 5$, dilations $[1, 2]$, channels

Curve Output 8-point + dense recon
evaluation in absolute space

$\hat{I}(V)$ on 8-point slice

$$\mathcal{L} = \mathcal{L}_{MSE} + \lambda_{mono}\mathcal{L}_{mono} + \lambda_{conv}\mathcal{L}_{conv} + \lambda_{curv}\mathcal{L}_{curv}$$
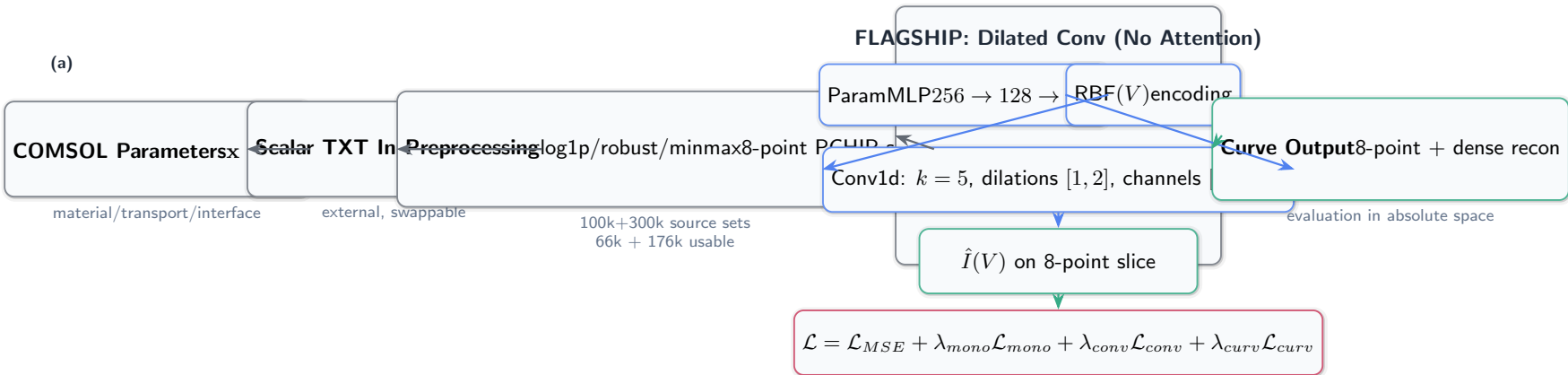
Physics-informed sequence reconstruction with external scalar conditioning