STEP 0: SAMPLING

Full order model: sampled with e.g. Latin-Hypercube sampling method

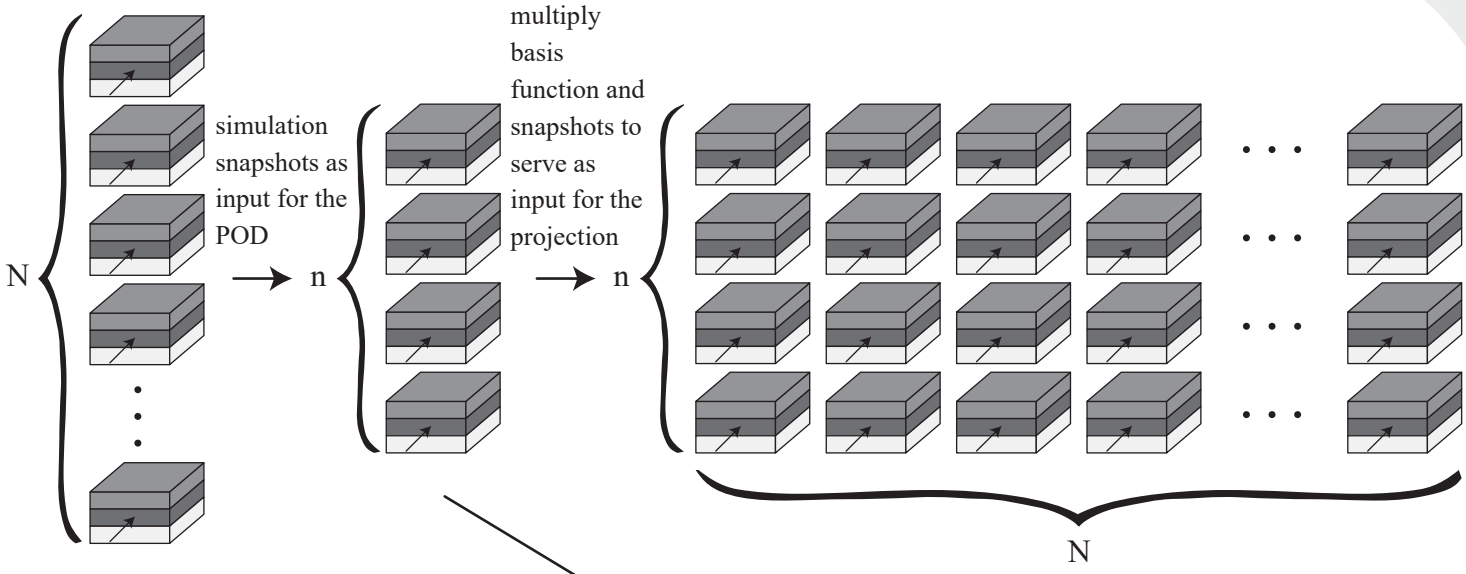
STEP 1: POD

Basis functions ψ_i: Capture characteristic physical behaviour

STEP 2: PROJECTION

Gaussian Process Regression Determines the reduced coefficients/weights of the basis functions

OFFLINE

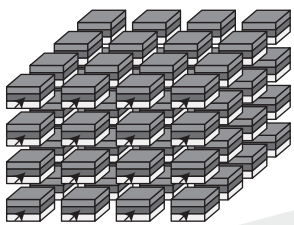


$$u_{rb}(\mu) = \sum_{i=1}^{r} \psi_i \quad \theta_{rb}^{(i)}(\mu)$$

Reduced order model

Multiplication of reduced coefficients and basis functions.

Evaluating the machine learning model θ_{rb} with new parameters μ.



New and fast full stress state predictions based on user-defined parameters

ONLINE