

# Linear\_velocity\_BayesianKalmanNet

February 1, 2026

```
[ ]: from pathlib import Path
from scipy.io import loadmat
import sys
import os

# Use the actual notebook working directory
nb_dir = Path.cwd()
print(f"Current notebook path: {nb_dir}")

# Optionally add the notebook dir (for local-only imports)
if str(nb_dir) not in sys.path:
    sys.path.insert(0, str(nb_dir))
    print(f"Added {nb_dir} to sys.path")

# Critically: add the repository root so top-level packages like 'utils' are
↳ importable
# Notebook path: /home/luky/skola/KalmanNet-main/navigation NCLT dataset/
↳ linear_velocity_integration
# Repo root is two levels up: /home/luky/skola/KalmanNet-main
repo_root = nb_dir.parents[1]
if str(repo_root) not in sys.path:
    sys.path.insert(0, str(repo_root))
    print(f"Added {repo_root} to sys.path")
```

```
[2]: import torch
import matplotlib.pyplot as plt
from utils import trainer
from utils import utils
from Systems import DynamicSystem
import Filters
import torch.nn.functional as F
from torch.utils.data import TensorDataset, DataLoader
import numpy as np
from scipy.io import loadmat
from scipy.interpolate import RegularGridInterpolator
import random
```

```

torch.manual_seed(42)
np.random.seed(42)
random.seed(42)
if torch.cuda.is_available():
    torch.cuda.manual_seed_all(42)

device = torch.device("cuda" if torch.cuda.is_available() else "cpu")
print(f"device: {device}")

```

device: cuda

```

[3]: import torch
import matplotlib.pyplot as plt
import os
import numpy as np

# === 1. KONFIGURACE ===
# Cesta k adresáři, který vytvořil preprocess skript
data_dir = '../preprocessed_NCLT_trajectory-2012-01-22'

print(f"Načítám data z: {data_dir}...")

try:
    # === 2. NAČTENÍ DAT (.pt soubory) ===
    # Data jsou uložena jako list slovníků [{'ground_truth': ...,
    ↪ 'filtered_gps': ...}]
    # filtered_gps zde ale obsahuje náš 4D vektor [GPS_X, ODO_VX, GPS_Y, ODO_VY]

    train_data = torch.load(os.path.join(data_dir, 'train.pt'))
    val_data = torch.load(os.path.join(data_dir, 'val.pt'))
    test_data = torch.load(os.path.join(data_dir, 'test.pt'))

    # Extrakce tensorů (předpokládáme 1 trajektorii v listu)
    X_train, Y_train = train_data[0]['ground_truth'],
    ↪ train_data[0]['filtered_gps']
    X_val, Y_val = val_data[0]['ground_truth'],
    ↪ val_data[0]['filtered_gps']
    X_test, Y_test = test_data[0]['ground_truth'],
    ↪ test_data[0]['filtered_gps']

    # Spojení zpět do jedné sekvence pro vizualizaci celé trajektorie
    X_full = torch.cat([X_train, X_val, X_test], dim=0)
    Y_full = torch.cat([Y_train, Y_val, Y_test], dim=0)

    print(f" Data úspěšně načtena.")
    print(f" -> Celkový počet vzorků: {X_full.shape[0]}")

```

```

print(f" -> Input Shape (Měření): {Y_full.shape} ... [GPS_X, ODO_VX, ↵
↵GPS_Y, ODO_VY]")
print(f" -> Target Shape (GT): {X_full.shape} ... [PX, VX, PY, VY]")

# === 3. VIZUALIZACE ===
# Převédeme na numpy pro matplotlib
gt_np = X_full.numpy()
meas_np = Y_full.numpy()
time_steps = np.arange(len(gt_np)) # Předpoklad 1Hz (DT=1.0)

fig, ax = plt.subplots(1, 3, figsize=(18, 6))

# --- A) Trajektorie (X-Y) ---
# Ground Truth (Sloupce 0 a 2 v Targetu)
ax[0].plot(gt_np[:, 0], gt_np[:, 2], 'k-', linewidth=2, label='Ground ↵
↵Truth')

# GPS Měření (Sloupce 0 a 2 v Inputu)
# Vykreslíme jen každý 20. bod, aby graf nebyl přeplácáný
ax[0].plot(meas_np[:, 0], meas_np[:, 2], 'r.', markersize=2, alpha=0.
↵6, label='GPS Měření')

ax[0].set_title('Trajektorie (X vs Y)')
ax[0].set_xlabel('Pozice X [m]')
ax[0].set_ylabel('Pozice Y [m]')
ax[0].axis('equal')
ax[0].legend()
ax[0].grid(True, alpha=0.3)

# --- B) Rychlost X (VX) ---
# GT Rychlost (Sloupec 1 v Targetu)
ax[1].plot(time_steps, gt_np[:, 1], 'b-', linewidth=1.5, label='GT Rychlost ↵
↵X')
# ODO Rychlost (Sloupec 1 v Inputu)
ax[1].plot(time_steps, meas_np[:, 1], 'g--', linewidth=1, alpha=0.8, ↵
↵label='Odometrie VX')

ax[1].set_title('Rychlostní profil X')
ax[1].set_xlabel('Čas [s]')
ax[1].set_ylabel('Rychlost [m/s]')
ax[1].legend()
ax[1].grid(True, alpha=0.3)

# --- C) Rychlost Y (VY) ---
# GT Rychlost (Sloupec 3 v Targetu)
ax[2].plot(time_steps, gt_np[:, 3], 'b-', linewidth=1.5, label='GT Rychlost ↵
↵Y')

```

```

# ODO Rychlost (Sloupec 3 v Inputu)
ax[2].plot(time_steps, meas_np[:, 3], 'g--', linewidth=1, alpha=0.8,
↳label='Odometrie VY')

ax[2].set_title('Rychlostní profil Y')
ax[2].set_xlabel('Čas [s]')
ax[2].set_ylabel('Rychlost [m/s]')
ax[2].legend()
ax[2].grid(True, alpha=0.3)

plt.tight_layout()
plt.show()

except FileNotFoundError:
    print(f" CHYBA: Adresář '{data_dir}' nebo soubory .pt nenalezeny.")
    print("Spustil jsi předtím skript 'preprocess_NCLT_trajectory_linear_test.
↳py'?")
except Exception as e:
    print(f" CHYBA: {e}")

```

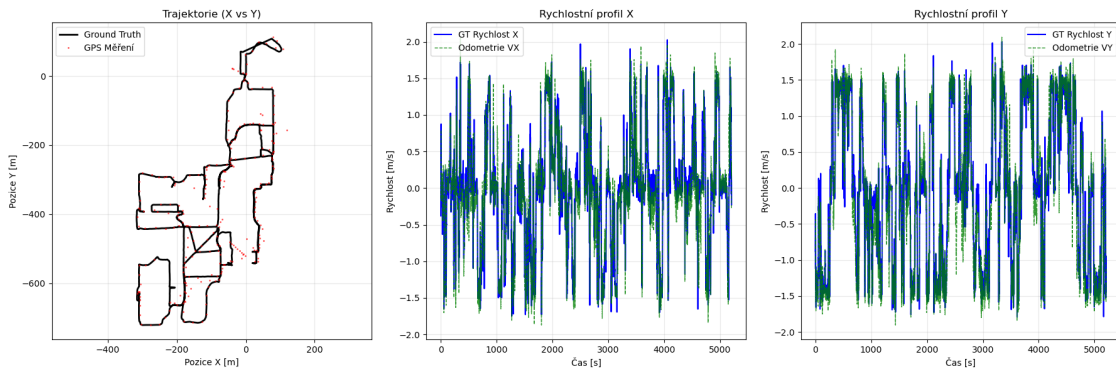
Načítám data z: ../preprocessed\_NCLT\_trajectory-2012-01-22...

Data úspěšně načtena.

-> Celkový počet vzorků: 5208

-> Input Shape (Měření): torch.Size([5208, 4]) ... [GPS\_X, ODO\_VX, GPS\_Y, ODO\_VY]

-> Target Shape (GT): torch.Size([5208, 4]) ... [PX, VX, PY, VY]



```

[4]: import torch
import matplotlib.pyplot as plt
import os
import numpy as np

# === 1. NAČTENÍ DAT ===
# Cesta k adresáři s daty (musí odpovídat výstupu předchozího skriptu)

```

```

data_dir = '../preprocessed_NCLT_trajectory-2012-01-22'

print(f"Načítám data pro vizualizaci z: {data_dir}...")

# Načtení listů (formát [{'ground_truth': ..., 'filtered_gps': ...}])
train_list = torch.load(os.path.join(data_dir, 'train.pt'))
val_list = torch.load(os.path.join(data_dir, 'val.pt'))
test_list = torch.load(os.path.join(data_dir, 'test.pt'))

# Extrakce Ground Truth tensorů (předpokládáme 1 souvislou trajektorii v indexu 0)
# GT formát: [px, vx, py, vy] -> X je index 0, Y je index 2
train_target = train_list[0]['ground_truth']
val_target = val_list[0]['ground_truth']
test_target = test_list[0]['ground_truth']

# Spočítáme celkový počet vzorků pro titulek
N_samples = len(train_target) + len(val_target) + len(test_target)
DT = 1.0 # Víme z konfigurace

# === 2. VIZUALIZACE ROZDĚLENÍ DATASETU ===

plt.figure(figsize=(12, 10))

# 1. Vykreslení Trénovací části (85%)
plt.plot(train_target[:, 0].numpy(),
         train_target[:, 2].numpy(),
         label=f'Train Set ({len(train_target)} samples)', color='#1f77b4',
         linewidth=2)

# 2. Vykreslení Validační části (10%)
plt.plot(val_target[:, 0].numpy(),
         val_target[:, 2].numpy(),
         label=f'Validation Set ({len(val_target)} samples)', color='#ff7f0e',
         linewidth=2)

# 3. Vykreslení Testovací části (5%)
plt.plot(test_target[:, 0].numpy(),
         test_target[:, 2].numpy(),
         label=f'Test Set ({len(test_target)} samples)', color='#2ca02c',
         linewidth=2)

# Zvýraznění začátku a konce
# Start (začátek tréninku)
plt.plot(train_target[0, 0], train_target[0, 2], 'ko', markersize=10,
         label='Start (Train)')
# End (konec testu)

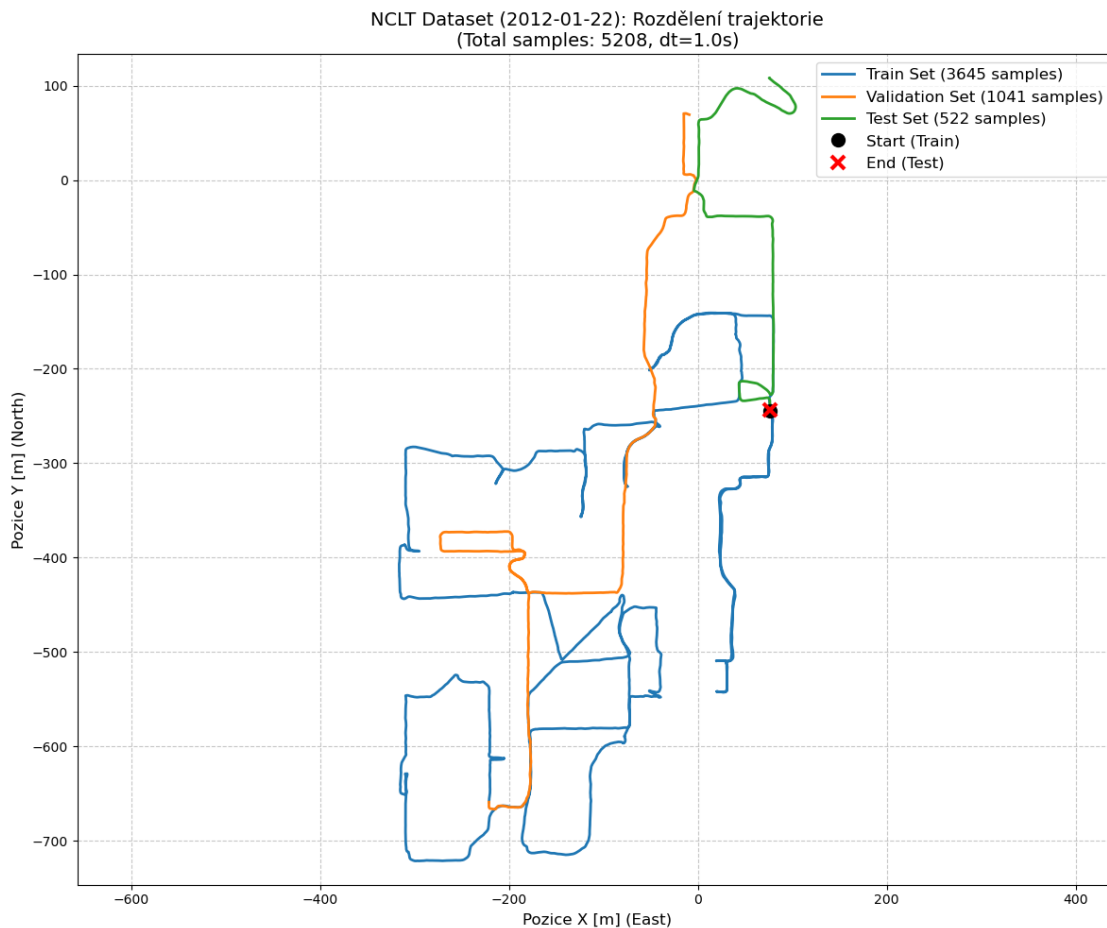
```

```
plt.plot(test_target[-1, 0], test_target[-1, 2], 'rx', markersize=10,
        ↪markeredgewidth=3, label='End (Test)')

# Formátování grafu
plt.title(f'NCLT Dataset (2012-01-22): Rozdělení trajektorie\n(Total samples:
        ↪{N_samples}, dt={DT}s)', fontsize=14)
plt.xlabel('Pozice X [m] (East)', fontsize=12)
plt.ylabel('Pozice Y [m] (North)', fontsize=12)
plt.legend(fontsize=12, loc='best')
plt.grid(True, linestyle='--', alpha=0.7)
plt.axis('equal') # Důležité: Aby mapa nebyla deformovaná

plt.tight_layout()
plt.show()
```

Načítám data pro vizualizaci z: ../preprocessed\_NCLT\_trajectory-2012-01-22...



# 1 Model definition

```
[5]: import torch
import math
import Systems # Tvůj modul s třídou DynamicSystem

# Nastavení zařízení
device = torch.device("cuda" if torch.cuda.is_available() else "cpu")

#####
### Design Parameters - REAL SENSOR FUSION (NCLT Dataset) ###
### Cíl: Fúze reálné GPS a Odometrie s optimálními parametry ###
#####

# 1. Rozměry
# Stav: [px, vx, py, vy] (Globální souřadnice)
m = 4
n = 4
delta_t = 1.0 # Sampling (1 Hz)

# 2. Dynamika (F) - Constant Velocity Model (Newton)
#  $x_{t+1} = x_t + v_t * dt$ 
#  $v_{t+1} = v_t$ 
F_dim = torch.tensor([[1.0, delta_t],
                      [0.0, 1.0]])

# Blokově diagonální pro X a Y: [[F, 0], [0, F]]
F_design = torch.block_diag(F_dim, F_dim).float()

# 3. Měření (H) - Identita
# Nyní měříme VŠECHNY stavy přímo:
#  $y = [gps\_px, odo\_vx, gps\_py, odo\_vy]$ 
H_design = torch.eye(n).float()

# 4. Šum procesu (Q) - Fyzikální model
# Používáme "Discretized Continuous White Noise Acceleration" model.
# -----
# OPTIMALIZOVANÁ HODNOTA Z NCLT DAT (2012-01-22):
q_scale = 0.006697
# -----

# Blok Q pro jednu dimenzi (pozice, rychlost)
Q_block = torch.tensor([[delta_t**3/3, delta_t**2/2],
                        [delta_t**2/2, delta_t]]) * q_scale

Q_design = torch.block_diag(Q_block, Q_block).float()
```

```

# 5. Šum měření (R) - Statistika z dat (Oracle)
# -----
# HODNOTY VYPOČTENÉ Z REZIDUÍ (Var = Std2):
var_gps = 93.8867 # Odpovídá chybě cca 9.7 metrů
var_odo = 0.0440 # Odpovídá chybě cca 0.21 m/s
# -----

R_design = torch.tensor([[var_gps, 0.0, 0.0, 0.0],
                          [0.0, var_odo, 0.0, 0.0],
                          [0.0, 0.0, var_gps, 0.0],
                          [0.0, 0.0, 0.0, var_odo]]).float()

# 6. Počáteční podmínky
# Inicializujeme na nule s rozumnou nejistotou
m1x_0 = torch.zeros(m, 1).float()
m2x_0 = torch.eye(m).float() * 10.0 # Větší nejistota na začátku (nevíme přesně
↳ kde jsme)

print("\nInicializuji systém pro REÁLNOU SENZORICKOU FÚZI (NCLT)...")
print(f"Dimenze stavu: {m}, Dimenze měření: {n}")
print(f"Použité Q scale: {q_scale}")
print(f"Použité R (diag): {torch.diagonal(R_design).numpy()}")

# === INICIALIZACE SYSTÉMŮ ===

# Sys True (V tomto reálném scénáři 'Sys True' neexistuje v generativním smyslu,
# protože data nepochází z tohoto modelu, ale z reality. Nicméně pro
↳ kompatibilitu
# s architekturou KalmanNetu ho definujeme stejně jako Model).
sys_true = Systems.DynamicSystem(
    state_dim=m, obs_dim=n,
    Ex0=m1x_0, P0=m2x_0,
    Q=Q_design, R=R_design,
    F=F_design, H=H_design,
    device=device
)

# Sys Model (To, co používá filtr pro odhad)
sys_model = Systems.DynamicSystem(
    state_dim=m, obs_dim=n,
    Ex0=m1x_0, P0=m2x_0,
    Q=Q_design, R=R_design,
    F=F_design, H=H_design,
    device=device
)

print("... Systémy inicializovány.")

```



```
print("Model je připraven na vstup: [GPS_X, ODO_VX, GPS_Y, ODO_VY]")
```

Inicializuji systém pro REÁLNOU SENZORICKOU FÚZI (NCLT)...

Dimenze stavu: 4, Dimenze měření: 4

Použité Q scale: 0.006697

Použité R (diag): [9.38867e+01 4.40000e-02 9.38867e+01 4.40000e-02]

... Systémy inicializovány.

Model je připraven na vstup: [GPS\_X, ODO\_VX, GPS\_Y, ODO\_VY]

```
[6]: import torch
import os
from torch.utils.data import TensorDataset, DataLoader

# === 0. NAČTENÍ PŘEDZPRACOVANÝCH DAT ===
data_dir = '../preprocessed_NCLT_trajectory-2012-01-22-angle-update' # Uprav
↳ cestu dle potřeby
print(f"Načítám data z: {data_dir}...")

try:
    train_list = torch.load(os.path.join(data_dir, 'train.pt'))
    val_list = torch.load(os.path.join(data_dir, 'val.pt'))
    test_list = torch.load(os.path.join(data_dir, 'test.pt'))

    # Extrakce tensorů
    train_target = train_list[0]['ground_truth'].float()
    val_target = val_list[0]['ground_truth'].float()
    test_target = test_list[0]['ground_truth'].float()

    train_input = train_list[0]['filtered_gps'].float()
    val_input = val_list[0]['filtered_gps'].float()
    test_input = test_list[0]['filtered_gps'].float()

    print(f"Data načtena. Train: {len(train_target)}, Val: {len(val_target)},
↳ Test: {len(test_target)}")

except FileNotFoundError:
    raise FileNotFoundError(f"Chybí data v {data_dir}.")

# === 1. KONFIGURACE ===
# Zde je ta změna:
TRAIN_SEQ_LEN = 50 # Krátké pro rychlý backprop
VAL_SEQ_LEN = 200 # Střední pro stabilní validaci (místo celé délky)
TEST_SEQ_LEN = len(test_target) # Test necháme celý pro finální "pravdu"

STRIDE_TRAIN = 5 # Překryv u tréninku (Data Augmentation)
STRIDE_VAL = 30 # Bez překryvu u validace (chceme nezávislé úseky)
```

```

BATCH_SIZE = 128

def create_sequences(X, Y, seq_len, stride=1):
    """
    Rozseká dlouhé tenzory na sekvence.
    """
    xs = []
    ys = []
    num_samples = X.shape[0]

    # Pokud je požadovaná délka delší než data, vrátíme co máme (pro Test)
    if seq_len >= num_samples:
        return X.unsqueeze(0), Y.unsqueeze(0)

    # Sekání
    for i in range(0, num_samples - seq_len + 1, stride):
        x_seq = X[i : i+seq_len, :]
        y_seq = Y[i : i+seq_len, :]
        xs.append(x_seq)
        ys.append(y_seq)

    if len(xs) == 0:
        return torch.empty(0, seq_len, X.shape[1]), torch.empty(0, seq_len, Y.
↪shape[1])

    return torch.stack(xs), torch.stack(ys)

def clean_sequences(X_seq, Y_seq, name="Dataset"):
    if X_seq.numel() == 0:
        print(f" {name}: Prázdný vstup!")
        return X_seq, Y_seq

    # Kontrola NaN/Inf
    is_nan_x = torch.isnan(X_seq).reshape(X_seq.shape[0], -1).any(dim=1)
    is_inf_x = torch.isinf(X_seq).reshape(X_seq.shape[0], -1).any(dim=1)
    is_nan_y = torch.isnan(Y_seq).reshape(Y_seq.shape[0], -1).any(dim=1)
    is_inf_y = torch.isinf(Y_seq).reshape(Y_seq.shape[0], -1).any(dim=1)

    invalid_mask = is_nan_x | is_inf_x | is_nan_y | is_inf_y
    valid_mask = ~invalid_mask

    X_clean = X_seq[valid_mask]
    Y_clean = Y_seq[valid_mask]

    n_dropped = invalid_mask.sum().item()
    if n_dropped > 0:

```

```

        print(f" {name}: Odstraněno {n_dropped} vadných sekvencí.")
    else:
        print(f" {name}: Data jsou čistá. ({len(X_clean)} sekvencí)")

    return X_clean, Y_clean

print("\n--- ZPRACOVÁNÍ SEKVENCÍ ---")

# === 2. TVORBA SEKVENCÍ ===
print(f"Generuji TRAIN sekvence (Len={TRAIN_SEQ_LEN}, Stride={STRIDE_TRAIN})...
↳")
train_X_raw, train_Y_raw = create_sequences(train_target, train_input,
↳TRAIN_SEQ_LEN, STRIDE_TRAIN)

# ZMĚNA: Validace už není jedna dlouhá nudle, ale sada 1000-krokových úseků
print(f"Generuji VAL sekvence (Len={VAL_SEQ_LEN}, Stride={STRIDE_VAL})...")
val_X_raw, val_Y_raw = create_sequences(val_target, val_input, VAL_SEQ_LEN,
↳STRIDE_VAL)

print(f"Generuji TEST sekvence (Full trajectory)...")
test_X_raw, test_Y_raw = create_sequences(test_target, test_input,
↳TEST_SEQ_LEN, TEST_SEQ_LEN)

# === 3. ČIŠTĚNÍ DAT ===
train_X_seq, train_Y_seq = clean_sequences(train_X_raw, train_Y_raw, "Train")
val_X_seq, val_Y_seq = clean_sequences(val_X_raw, val_Y_raw, "Val")
test_X_seq, test_Y_seq = clean_sequences(test_X_raw, test_Y_raw, "Test")

# === 4. VYTVOŘENÍ DATALOADERŮ ===
print("\nVytvářím DataLoader...")

train_dataset = TensorDataset(train_X_seq, train_Y_seq)
train_loader = DataLoader(train_dataset, batch_size=BATCH_SIZE, shuffle=True)

# Val: Batch size může být nyní větší než 1, protože máme více sekvencí stejné
↳délky!
# To zrychlí validaci.
val_dataset = TensorDataset(val_X_seq, val_Y_seq)
val_loader = DataLoader(val_dataset, batch_size=BATCH_SIZE, shuffle=False)

test_dataset = TensorDataset(test_X_seq, test_Y_seq)
test_loader = DataLoader(test_dataset, batch_size=1, shuffle=False)

print(f"\n HOTOVO.")
print(f"Train samples: {len(train_dataset)}")
print(f"Val samples: {len(val_dataset)} (Délka každé sekvence:
↳{VAL_SEQ_LEN})")

```

```
print(f"Test samples: {len(test_dataset)} (Celá trajektorie)")
```

Načítám data z: ../preprocessed\_NCLT\_trajectory-2012-01-22-angle-update..  
Data načtena. Train: 3645, Val: 1041, Test: 522

--- ZPRACOVÁNÍ SEKVENCÍ ---

Generuji TRAIN sekvence (Len=50, Stride=5)...

Generuji VAL sekvence (Len=200, Stride=30)...

Generuji TEST sekvence (Full trajectory)...

Train: Data jsou čistá. (720 sekvencí)

Val: Data jsou čistá. (29 sekvencí)

Test: Data jsou čistá. (1 sekvencí)

Vytvářím DataLoader...

HOTOVO.

Train samples: 720

Val samples: 29 (Délka každé sekvence: 200)

Test samples: 1 (Celá trajektorie)

```
[7]: import torch
import torch.nn.functional as F
import numpy as np
from copy import deepcopy

def train_BayesianKalmanNet_Hybrid(
    model, train_loader, val_loader, device,
    total_train_iter, learning_rate, clip_grad,
    J_samples, validation_period, logging_period,
    warmup_iterations=0, weight_decay=1e-5,
    lambda_mse=100.0 # <--- NOVÝ PARAMETR: Kotva pro MSE
):
    # torch.autograd.set_detect_anomaly(True)
    optimizer = torch.optim.AdamW(model.parameters(), lr=learning_rate,
    ↪weight_decay=weight_decay)

    # Scheduler: Pokud se loss zasekne, snížíme LR (pomáhá stabilizovat ↪
    ↪konvergenci)
    scheduler = torch.optim.lr_scheduler.ReduceLROnPlateau(
        optimizer, mode='min', factor=0.5, patience=50, verbose=True
    )

    best_val_anees = float('inf')
    score_at_best = {"val_nll": 0.0, "val_mse": 0.0}
    best_iter_count = 0
    best_model_state = None
    train_iter_count = 0
```

```

done = False

print(f" START Hybrid Training: Loss = NLL + {lambda_mse} * MSE")

while not done:
    model.train()
    for x_true_batch, y_meas_batch in train_loader:
        if train_iter_count >= total_train_iter: done = True; break
        if torch.isnan(x_true_batch).any():
            print(f"!!! SKIP BATCH iter {train_iter_count}: NaN found in_
↪x_true (Ground Truth) !!!")
            continue

        x_true_batch = x_true_batch.to(device)
        y_meas_batch = y_meas_batch.to(device)

        # --- Training ---
        optimizer.zero_grad()
        batch_size, seq_len, _ = x_true_batch.shape

        all_trajectories_for_ensemble = []
        all_regs_for_ensemble = []

        # 1. Ensemble Forward Pass
        for j in range(J_samples):
            model.reset(batch_size=batch_size, initial_state=x_true_batch[:
↪, 0, :])

            current_trajectory_x_hats = []
            current_trajectory_regs = []
            for t in range(1, seq_len):
                y_t = y_meas_batch[:, t, :]
                x_filtered_t, reg_t = model.step(y_t)
                if torch.isnan(x_filtered_t).any():
                    raise ValueError(f"NaN in x_filtered_t at sample_
↪{j}, step {t}")

                current_trajectory_x_hats.append(x_filtered_t)
                current_trajectory_regs.append(reg_t)
            all_trajectories_for_ensemble.append(torch.
↪stack(current_trajectory_x_hats, dim=1))
            all_regs_for_ensemble.append(torch.sum(torch.
↪stack(current_trajectory_regs)))

        # 2. Statisticky Ensemble
        ensemble_trajectories = torch.stack(all_trajectories_for_ensemble,
↪dim=0)

        x_hat_sequence = ensemble_trajectories.mean(dim=0)

```

```

# Epistemická variance (čistý rozptyl sítě)
# Přičítáme 1e-9 jen proti dělení nulou, není to "noise floor"
cov_diag_sequence = ensemble_trajectories.var(dim=0) + 1e-9

regularization_loss = torch.stack(all_regs_for_ensemble).mean()
target_sequence = x_true_batch[:, 1:, :]

# --- 3. VÝPOČET HYBRIDNÍ LOSS ---

# A) MSE Část (Přesnost)
mse_loss = F.mse_loss(x_hat_sequence, target_sequence)

# B) NLL Část (Konzistence)
# 0.5 * (log(var) + (target - pred)^2 / var)
error_sq = (x_hat_sequence - target_sequence) ** 2
nll_loss = 0.5 * (torch.log(cov_diag_sequence) + error_sq /
→cov_diag_sequence).mean()

# C) Celková Loss (Hybrid)
# Zde je ta magie: I když NLL chce utéct s variancí, lambda_mse *
→mse ho drží zpátky
loss = nll_loss + (lambda_mse * mse_loss) + regularization_loss * 1.
→0

if torch.isnan(loss):
    print("Collapse detected (NaN loss)"); done = True; break

loss.backward()
if clip_grad > 0: torch.nn.utils.clip_grad_norm_(model.
→parameters(), clip_grad)
optimizer.step()
train_iter_count += 1

# --- Logging ---
diff = x_hat_sequence - target_sequence
mean_error = diff.abs().mean().item()
min_variance = cov_diag_sequence.min().item()

if train_iter_count % logging_period == 0:
    with torch.no_grad():
        # Zjistíme dropout pravděpodobnosti (jen pro info)
        p1 = torch.sigmoid(model.dnn.concrete_dropout1.p_logit).
→item()

        p2 = torch.sigmoid(model.dnn.concrete_dropout2.p_logit).
→item()

```

```

        print(f"--- Iter [{train_iter_count}/{total_train_iter}] ---")
        print(f"    Total Loss: {loss.item():.4f}")
        print(f"    MSE Component: {mse_loss.item():.4f} (Weighted:␣
↪{(mse_loss.item() * lambda_mse):.4f})")
        print(f"    NLL Component: {nll_loss.item():.4f}")
        print(f"    Min Variance: {min_variance:.2e}")
        print(f"    p1={p1:.3f}, p2={p2:.3f}")

    # --- Validation step ---
    if train_iter_count > 0 and train_iter_count % validation_period ==␣
↪0:

        # Step scheduleru podle trénovací loss (nebo validace, pokud␣
↪bys to předělal)
        scheduler.step(loss)

        print(f"\n--- Validation at iteration {train_iter_count} ---")
        model.eval()
        val_mse_list = []
        all_val_x_true_cpu, all_val_x_hat_cpu, all_val_P_hat_cpu = [],␣
↪[], []

        with torch.no_grad():
            for x_true_val_batch, y_meas_val_batch in val_loader:
                val_batch_size, val_seq_len, _ = x_true_val_batch.shape
                x_true_val_batch = x_true_val_batch.to(device)
                y_meas_val_batch = y_meas_val_batch.to(device)
                val_ensemble_trajectories = []
                for j in range(J_samples):
                    model.reset(batch_size=val_batch_size,␣
↪initial_state=x_true_val_batch[:, 0, :])
                    val_current_x_hats = []
                    for t in range(1, val_seq_len):
                        y_t_val = y_meas_val_batch[:, t, :]
                        x_filtered_t, _ = model.step(y_t_val)
                        val_current_x_hats.append(x_filtered_t)
                    val_ensemble_trajectories.append(torch.
↪stack(val_current_x_hats, dim=1))

                # Agregace validace
                val_ensemble = torch.stack(val_ensemble_trajectories,␣
↪dim=0)

                val_preds_seq = val_ensemble.mean(dim=0)

                val_target_seq = x_true_val_batch[:, 1:, :]

```

```

        val_mse_list.append(F.mse_loss(val_preds_seq,
↪val_target_seq).item())

        # Příprava pro ANEES
        initial_state_val = x_true_val_batch[:, 0, :].
↪unsqueeze(1)

        full_x_hat = torch.cat([initial_state_val,
↪val_preds_seq], dim=1)

        # Epistemická variance
        val_covs_diag = val_ensemble.var(dim=0) + 1e-9

        # Vytvoření diagonálních matic P
        # (Zjednodušená konstrukce pro ANEES calc)
        # Pro přesné ANEES bychom měli dělat outer product,
        # ale diagonála z var() je dobrá aproximace pro BKN
        val_covs_full = torch.zeros(val_batch_size,
↪val_seq_len-1, 4, 4, device=device)
        for b in range(val_batch_size):
            for t in range(val_seq_len-1):
                val_covs_full[b, t] = torch.
↪diag(val_covs_diag[b, t])

        P0 = model.system_model.P0.unsqueeze(0).
↪repeat(val_batch_size, 1, 1).unsqueeze(1)
        full_P_hat = torch.cat([P0, val_covs_full], dim=1)

        all_val_x_true_cpu.append(x_true_val_batch.cpu())
        all_val_x_hat_cpu.append(full_x_hat.cpu())
        all_val_P_hat_cpu.append(full_P_hat.cpu())

        avg_val_mse = np.mean(val_mse_list)
        final_x_true_list = torch.cat(all_val_x_true_cpu, dim=0)
        final_x_hat_list = torch.cat(all_val_x_hat_cpu, dim=0)
        final_P_hat_list = torch.cat(all_val_P_hat_cpu, dim=0)

        # Výpočet ANEES
        avg_val_anees = trainer.
↪calculate_anees_vectorized(final_x_true_list, final_x_hat_list,
↪final_P_hat_list)

        print(f" Average MSE: {avg_val_mse:.4f}, Average ANEES:
↪{avg_val_anees:.4f}")

        # Ukládání modelu:

```



```

        # ZDE POZOR: Ukládáme, pokud je ANEES rozumné A ZÁROVEŇ MSE
        ↪není katastrofické.
        # Nebo prostě ukládáme podle nejlepšího ANEES jako dřív, ale s
        ↪vědomím hybridní loss.
        if not np.isnan(avg_val_anees) and avg_val_anees <
        ↪best_val_anees and avg_val_anees > 0:
            print(" >>> New best VALIDATION ANEES! Saving model. <<<")
            best_val_anees = avg_val_anees
            best_iter_count = train_iter_count
            score_at_best['val_mse'] = avg_val_mse
            best_model_state = deepcopy(model.state_dict())
            print("-" * 50)
            model.train()

    print("\nTraining completed.")
    if best_model_state:
        print(f>Loading best model from iteration {best_iter_count} with ANEES
        ↪{best_val_anees:.4f}")
        model.load_state_dict(best_model_state)
    else:
        print("No best model was saved; returning last state.")

    return {
        "best_val_anees": best_val_anees,
        "best_val_nll": score_at_best['val_nll'],
        "best_val_mse": score_at_best['val_mse'],
        "best_iter": best_iter_count,
        "final_model": model
    }

```

```

[8]: import torch
import torch.nn as nn
from torch.utils.data import TensorDataset, DataLoader
import numpy as np
import os
import random
import csv
from datetime import datetime
import pandas as pd
from copy import deepcopy
from state_NN_models import StateBayesianKalmanNet

# Nastavení seedu pro reprodukovatelnost tohoto běhu
torch.manual_seed(42)
np.random.seed(42)
random.seed(42)
# Změny v parametrech

```

```

state_knet = StateBayesianKalmanNet(
    sys_model,
    device=device,
    hidden_size_multiplier=10,      # Necháme
    output_layer_multiplier=4,
    num_gru_layers=1,
    init_max_dropout=0.3,          # <--- SNÍŽENO (bylo 0.6)
    init_min_dropout=0.1,          # <--- SNÍŽENO (bylo 0.4)
    norm_states=True               # Pokud ti to s tím minule běželo, nech to,
                                   # ale LayerNorm v síti musí být!
).to(device)

train_BayesianKalmanNet_Hybrid(
    model=state_knet,
    train_loader=train_loader,
    val_loader=val_loader,
    device=device,
    total_train_iter=2000,          # Mírně delší
    learning_rate=1e-4,             # <--- Mírně zvýšeno pro dynamiku
    warmup_iterations=0,            # <--- PRODLOUŽENO (důležité pro MSE)
    clip_grad=1.0,                 # Uvolníme trochu gradienty
    J_samples=7,                   # Pro rychlost ladění stačí 5, na finále
    ➔dej 10+
    validation_period=10,
    logging_period=1,
    weight_decay=1e-3,
    lambda_mse=1000.0              # <--- NOVÝ PARAMETR: Kotva pro MSE
)

```

INFO: Aplikuji 'Start Zero' inicializaci pro Kalman Gain.

DEBUG: Výstupní vrstva vynulována (Soft Start).

/home/luky/.local/lib/python3.10/site-packages/torch/optim/lr\_scheduler.py:28:  
 UserWarning: The verbose parameter is deprecated. Please use get\_last\_lr() to  
 access the learning rate.

warnings.warn("The verbose parameter is deprecated. Please use get\_last\_lr() "

START Hybrid Training: Loss = NLL + 1000.0 \* MSE

--- Iter [1/2000] ---

Total Loss: 354432.2812

MSE Component: 353.9893 (Weighted: 353989.3188)

NLL Component: 442.8661

Min Variance: 4.27e-07

p1=0.258, p2=0.233

--- Iter [2/2000] ---

Total Loss: 360292.0312

MSE Component: 359.7486 (Weighted: 359748.5962)

NLL Component: 543.3486

```

Min Variance: 4.02e-07
p1=0.258, p2=0.233
--- Iter [3/2000] ---
Total Loss: 698427.4375
MSE Component: 697.7944 (Weighted: 697794.3726)
NLL Component: 632.9862
Min Variance: 5.44e-08
p1=0.258, p2=0.233
--- Iter [4/2000] ---
Total Loss: 838212.1250
MSE Component: 837.6701 (Weighted: 837670.1050)
NLL Component: 541.9357
Min Variance: 4.00e-07
p1=0.258, p2=0.233
--- Iter [5/2000] ---
Total Loss: 481844.5625
MSE Component: 481.3866 (Weighted: 481386.5967)
NLL Component: 457.8594
Min Variance: 1.14e-07
p1=0.258, p2=0.233
--- Iter [6/2000] ---
Total Loss: 680335.5000
MSE Component: 679.7809 (Weighted: 679780.9448)
NLL Component: 554.5103
Min Variance: 1.77e-07
p1=0.258, p2=0.233
--- Iter [7/2000] ---
Total Loss: 665994.2500
MSE Component: 665.5992 (Weighted: 665599.1821)
NLL Component: 394.9933
Min Variance: 2.21e-07
p1=0.258, p2=0.233
--- Iter [8/2000] ---
Total Loss: 414481.8125
MSE Component: 414.1552 (Weighted: 414155.1514)
NLL Component: 326.5493
Min Variance: 7.39e-08
p1=0.258, p2=0.233
--- Iter [9/2000] ---
Total Loss: 416329.6875
MSE Component: 415.9574 (Weighted: 415957.4280)
NLL Component: 372.1499
Min Variance: 8.57e-08
p1=0.258, p2=0.233
--- Iter [10/2000] ---
Total Loss: 438172.2812
MSE Component: 437.8390 (Weighted: 437838.9893)
NLL Component: 333.1835

```

```

Min Variance: 1.16e-06
p1=0.258, p2=0.233

--- Validation at iteration 10 ---
Average MSE: 651.3585, Average ANEES: 515.1022
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [11/2000] ---
Total Loss: 62781.6133
MSE Component: 62.5279 (Weighted: 62527.9121)
NLL Component: 253.6105
Min Variance: 5.47e-07
p1=0.258, p2=0.233
--- Iter [12/2000] ---
Total Loss: 53948.3945
MSE Component: 53.6141 (Weighted: 53614.0518)
NLL Component: 334.2537
Min Variance: 2.46e-06
p1=0.258, p2=0.233
--- Iter [13/2000] ---
Total Loss: 156693.0156
MSE Component: 156.4297 (Weighted: 156429.6875)
NLL Component: 263.2307
Min Variance: 1.32e-07
p1=0.258, p2=0.233
--- Iter [14/2000] ---
Total Loss: 72738.5703
MSE Component: 72.4745 (Weighted: 72474.4797)
NLL Component: 264.0076
Min Variance: 9.11e-07
p1=0.258, p2=0.233
--- Iter [15/2000] ---
Total Loss: 148279.8750
MSE Component: 148.1094 (Weighted: 148109.4055)
NLL Component: 170.3697
Min Variance: 9.97e-08
p1=0.258, p2=0.233
--- Iter [16/2000] ---
Total Loss: 72055.8594
MSE Component: 71.8641 (Weighted: 71864.1052)
NLL Component: 191.6695
Min Variance: 9.53e-07
p1=0.258, p2=0.233
--- Iter [17/2000] ---
Total Loss: 74060.0078
MSE Component: 73.8983 (Weighted: 73898.3078)
NLL Component: 161.6200
Min Variance: 3.64e-06

```

```

    p1=0.258, p2=0.233
--- Iter [18/2000] ---
    Total Loss: 95965.4766
    MSE Component: 95.7779 (Weighted: 95777.8854)
    NLL Component: 187.5102
    Min Variance: 1.22e-06
    p1=0.258, p2=0.233
--- Iter [19/2000] ---
    Total Loss: 98568.5078
    MSE Component: 98.4089 (Weighted: 98408.8974)
    NLL Component: 159.5252
    Min Variance: 1.42e-06
    p1=0.258, p2=0.233
--- Iter [20/2000] ---
    Total Loss: 65435.5625
    MSE Component: 65.2679 (Weighted: 65267.8680)
    NLL Component: 167.6045
    Min Variance: 5.31e-07
    p1=0.258, p2=0.233

--- Validation at iteration 20 ---
    Average MSE: 708.0764, Average ANEES: 666.3026
-----
--- Iter [21/2000] ---
    Total Loss: 70844.2891
    MSE Component: 70.7244 (Weighted: 70724.4110)
    NLL Component: 119.7911
    Min Variance: 3.10e-06
    p1=0.258, p2=0.233
--- Iter [22/2000] ---
    Total Loss: 60994.2656
    MSE Component: 60.8752 (Weighted: 60875.1945)
    NLL Component: 118.9802
    Min Variance: 6.33e-06
    p1=0.258, p2=0.233
--- Iter [23/2000] ---
    Total Loss: 52117.8516
    MSE Component: 51.9744 (Weighted: 51974.4186)
    NLL Component: 143.3434
    Min Variance: 3.71e-07
    p1=0.258, p2=0.233
--- Iter [24/2000] ---
    Total Loss: 51780.5586
    MSE Component: 51.6484 (Weighted: 51648.4451)
    NLL Component: 132.0215
    Min Variance: 6.32e-07
    p1=0.258, p2=0.233
--- Iter [25/2000] ---

```

```

Total Loss: 31600.9688
MSE Component: 31.4843 (Weighted: 31484.3292)
NLL Component: 116.5513
Min Variance: 9.61e-07
p1=0.258, p2=0.233
--- Iter [26/2000] ---
Total Loss: 72809.5234
MSE Component: 72.7058 (Weighted: 72705.7877)
NLL Component: 103.6493
Min Variance: 3.90e-07
p1=0.258, p2=0.233
--- Iter [27/2000] ---
Total Loss: 78989.0469
MSE Component: 78.8807 (Weighted: 78880.6534)
NLL Component: 108.3013
Min Variance: 7.00e-07
p1=0.258, p2=0.233
--- Iter [28/2000] ---
Total Loss: 83475.3906
MSE Component: 83.3835 (Weighted: 83383.4763)
NLL Component: 91.8275
Min Variance: 1.67e-06
p1=0.258, p2=0.233
--- Iter [29/2000] ---
Total Loss: 48103.4883
MSE Component: 48.0028 (Weighted: 48002.7695)
NLL Component: 100.6270
Min Variance: 2.58e-06
p1=0.258, p2=0.233
--- Iter [30/2000] ---
Total Loss: 54320.6797
MSE Component: 54.2147 (Weighted: 54214.6912)
NLL Component: 105.8965
Min Variance: 1.34e-06
p1=0.258, p2=0.233

--- Validation at iteration 30 ---
Average MSE: 748.2621, Average ANEES: 754.5770
-----
--- Iter [31/2000] ---
Total Loss: 62451.0156
MSE Component: 62.3400 (Weighted: 62339.9887)
NLL Component: 110.9382
Min Variance: 1.40e-06
p1=0.258, p2=0.233
--- Iter [32/2000] ---
Total Loss: 46012.8359
MSE Component: 45.8890 (Weighted: 45889.0343)

```

```

NLL Component: 123.7093
Min Variance: 7.37e-07
p1=0.258, p2=0.233
--- Iter [33/2000] ---
Total Loss: 42166.9453
MSE Component: 42.0407 (Weighted: 42040.7410)
NLL Component: 126.1150
Min Variance: 2.39e-06
p1=0.258, p2=0.233
--- Iter [34/2000] ---
Total Loss: 46494.1016
MSE Component: 46.3565 (Weighted: 46356.5140)
NLL Component: 137.4965
Min Variance: 2.96e-06
p1=0.258, p2=0.233
--- Iter [35/2000] ---
Total Loss: 47877.0859
MSE Component: 47.6982 (Weighted: 47698.1812)
NLL Component: 178.8168
Min Variance: 1.79e-06
p1=0.258, p2=0.233
--- Iter [36/2000] ---
Total Loss: 49565.8789
MSE Component: 49.4548 (Weighted: 49454.7729)
NLL Component: 111.0174
Min Variance: 3.73e-06
p1=0.258, p2=0.233
--- Iter [37/2000] ---
Total Loss: 27632.1074
MSE Component: 27.4828 (Weighted: 27482.8300)
NLL Component: 149.1890
Min Variance: 2.52e-06
p1=0.258, p2=0.233
--- Iter [38/2000] ---
Total Loss: 69768.4922
MSE Component: 69.6629 (Weighted: 69662.9333)
NLL Component: 105.4787
Min Variance: 1.60e-06
p1=0.258, p2=0.233
--- Iter [39/2000] ---
Total Loss: 33506.8008
MSE Component: 33.3777 (Weighted: 33377.7313)
NLL Component: 128.9785
Min Variance: 3.53e-06
p1=0.258, p2=0.233
--- Iter [40/2000] ---
Total Loss: 41492.5430
MSE Component: 41.3668 (Weighted: 41366.8098)

```

```

NLL Component: 125.6454
Min Variance: 5.92e-06
p1=0.258, p2=0.233

--- Validation at iteration 40 ---
Average MSE: 849.1864, Average ANEES: 942.3625
-----
--- Iter [41/2000] ---
Total Loss: 43854.2109
MSE Component: 43.7136 (Weighted: 43713.6040)
NLL Component: 140.5160
Min Variance: 8.26e-07
p1=0.258, p2=0.233
--- Iter [42/2000] ---
Total Loss: 41199.0117
MSE Component: 40.9970 (Weighted: 40997.0169)
NLL Component: 201.9081
Min Variance: 8.00e-06
p1=0.258, p2=0.233
--- Iter [43/2000] ---
Total Loss: 20158.8223
MSE Component: 20.0168 (Weighted: 20016.7885)
NLL Component: 141.9451
Min Variance: 1.27e-06
p1=0.258, p2=0.233
--- Iter [44/2000] ---
Total Loss: 58657.5781
MSE Component: 58.4831 (Weighted: 58483.0818)
NLL Component: 174.4054
Min Variance: 2.04e-06
p1=0.258, p2=0.233
--- Iter [45/2000] ---
Total Loss: 51412.4961
MSE Component: 51.2346 (Weighted: 51234.5619)
NLL Component: 177.8451
Min Variance: 8.15e-07
p1=0.258, p2=0.233
--- Iter [46/2000] ---
Total Loss: 60279.1445
MSE Component: 60.0611 (Weighted: 60061.1076)
NLL Component: 217.9471
Min Variance: 4.79e-06
p1=0.258, p2=0.233
--- Iter [47/2000] ---
Total Loss: 39713.0586
MSE Component: 39.5557 (Weighted: 39555.6946)
NLL Component: 157.2744
Min Variance: 1.85e-06

```



```

    p1=0.258, p2=0.233
--- Iter [48/2000] ---
    Total Loss: 40071.2266
    MSE Component: 39.8448 (Weighted: 39844.7762)
    NLL Component: 226.3604
    Min Variance: 7.93e-06
    p1=0.258, p2=0.233
--- Iter [49/2000] ---
    Total Loss: 40540.1602
    MSE Component: 40.3978 (Weighted: 40397.8081)
    NLL Component: 142.2623
    Min Variance: 2.95e-06
    p1=0.258, p2=0.233
--- Iter [50/2000] ---
    Total Loss: 39172.0898
    MSE Component: 39.0632 (Weighted: 39063.2401)
    NLL Component: 108.7629
    Min Variance: 3.62e-06
    p1=0.258, p2=0.233

--- Validation at iteration 50 ---
    Average MSE: 1225.1946, Average ANEES: 836.2440
-----
--- Iter [51/2000] ---
    Total Loss: 41448.7852
    MSE Component: 41.2771 (Weighted: 41277.0538)
    NLL Component: 171.6420
    Min Variance: 3.70e-06
    p1=0.258, p2=0.233
--- Iter [52/2000] ---
    Total Loss: 42277.0781
    MSE Component: 42.1165 (Weighted: 42116.4589)
    NLL Component: 160.5319
    Min Variance: 4.17e-07
    p1=0.258, p2=0.233
--- Iter [53/2000] ---
    Total Loss: 47373.9336
    MSE Component: 47.2005 (Weighted: 47200.5348)
    NLL Component: 173.3085
    Min Variance: 1.80e-06
    p1=0.258, p2=0.233
--- Iter [54/2000] ---
    Total Loss: 19816.9004
    MSE Component: 19.7034 (Weighted: 19703.3844)
    NLL Component: 113.4281
    Min Variance: 4.36e-06
    p1=0.258, p2=0.233
--- Iter [55/2000] ---

```

```

Total Loss: 38449.3242
MSE Component: 38.3042 (Weighted: 38304.2145)
NLL Component: 145.0206
Min Variance: 1.72e-06
p1=0.258, p2=0.233
--- Iter [56/2000] ---
Total Loss: 42542.6602
MSE Component: 42.3392 (Weighted: 42339.1647)
NLL Component: 203.4046
Min Variance: 9.42e-06
p1=0.258, p2=0.233
--- Iter [57/2000] ---
Total Loss: 41501.5000
MSE Component: 41.2852 (Weighted: 41285.1791)
NLL Component: 216.2286
Min Variance: 1.10e-06
p1=0.258, p2=0.233
--- Iter [58/2000] ---
Total Loss: 31417.5488
MSE Component: 31.3126 (Weighted: 31312.5648)
NLL Component: 104.8969
Min Variance: 5.31e-06
p1=0.258, p2=0.233
--- Iter [59/2000] ---
Total Loss: 30944.9121
MSE Component: 30.7997 (Weighted: 30799.7150)
NLL Component: 145.1086
Min Variance: 1.61e-06
p1=0.258, p2=0.233
--- Iter [60/2000] ---
Total Loss: 28015.7266
MSE Component: 27.9016 (Weighted: 27901.6209)
NLL Component: 114.0171
Min Variance: 2.73e-06
p1=0.258, p2=0.233

--- Validation at iteration 60 ---
Average MSE: 1006.4967, Average ANEES: 697.8434
-----
--- Iter [61/2000] ---
Total Loss: 26708.8164
MSE Component: 26.6037 (Weighted: 26603.7312)
NLL Component: 104.9976
Min Variance: 9.13e-07
p1=0.258, p2=0.233
--- Iter [62/2000] ---
Total Loss: 38940.8867
MSE Component: 38.7789 (Weighted: 38778.9383)

```

```

NLL Component: 161.8601
Min Variance: 8.40e-06
p1=0.258, p2=0.233
--- Iter [63/2000] ---
Total Loss: 26738.1895
MSE Component: 26.6177 (Weighted: 26617.7044)
NLL Component: 120.3960
Min Variance: 1.49e-06
p1=0.258, p2=0.233
--- Iter [64/2000] ---
Total Loss: 35282.8906
MSE Component: 35.1593 (Weighted: 35159.3094)
NLL Component: 123.4905
Min Variance: 1.63e-06
p1=0.258, p2=0.233
--- Iter [65/2000] ---
Total Loss: 37439.1406
MSE Component: 37.2926 (Weighted: 37292.6102)
NLL Component: 146.4432
Min Variance: 1.77e-06
p1=0.258, p2=0.233
--- Iter [66/2000] ---
Total Loss: 44311.4883
MSE Component: 44.1003 (Weighted: 44100.2541)
NLL Component: 211.1435
Min Variance: 1.73e-06
p1=0.258, p2=0.233
--- Iter [67/2000] ---
Total Loss: 24840.6113
MSE Component: 24.6977 (Weighted: 24697.6719)
NLL Component: 142.8508
Min Variance: 1.32e-06
p1=0.258, p2=0.233
--- Iter [68/2000] ---
Total Loss: 39147.2422
MSE Component: 38.9359 (Weighted: 38935.9131)
NLL Component: 211.2384
Min Variance: 4.03e-06
p1=0.258, p2=0.233
--- Iter [69/2000] ---
Total Loss: 52542.6680
MSE Component: 52.3618 (Weighted: 52361.7554)
NLL Component: 180.8229
Min Variance: 6.03e-06
p1=0.258, p2=0.233
--- Iter [70/2000] ---
Total Loss: 46044.7227
MSE Component: 45.8456 (Weighted: 45845.6459)

```

NLL Component: 198.9887  
Min Variance: 3.75e-06  
p1=0.258, p2=0.233

--- Validation at iteration 70 ---

Average MSE: 489.8511, Average ANEES: 1771.4752

-----  
--- Iter [71/2000] ---

Total Loss: 22347.6719  
MSE Component: 22.2456 (Weighted: 22245.5921)  
NLL Component: 101.9930  
Min Variance: 2.99e-06  
p1=0.258, p2=0.233

--- Iter [72/2000] ---

Total Loss: 18669.5801  
MSE Component: 18.5905 (Weighted: 18590.4961)  
NLL Component: 78.9964  
Min Variance: 1.01e-05  
p1=0.258, p2=0.233

--- Iter [73/2000] ---

Total Loss: 36611.2109  
MSE Component: 36.5332 (Weighted: 36533.1917)  
NLL Component: 77.9288  
Min Variance: 3.13e-06  
p1=0.258, p2=0.233

--- Iter [74/2000] ---

Total Loss: 78119.0859  
MSE Component: 78.0414 (Weighted: 78041.3895)  
NLL Component: 77.6088  
Min Variance: 1.00e-05  
p1=0.258, p2=0.233

--- Iter [75/2000] ---

Total Loss: 32941.5859  
MSE Component: 32.8701 (Weighted: 32870.1096)  
NLL Component: 71.3862  
Min Variance: 1.59e-06  
p1=0.258, p2=0.233

--- Iter [76/2000] ---

Total Loss: 45356.1758  
MSE Component: 45.2740 (Weighted: 45273.9639)  
NLL Component: 82.1208  
Min Variance: 3.52e-07  
p1=0.258, p2=0.233

--- Iter [77/2000] ---

Total Loss: 56855.4219  
MSE Component: 56.7668 (Weighted: 56766.7999)  
NLL Component: 88.5301  
Min Variance: 8.10e-06

```

    p1=0.258, p2=0.233
--- Iter [78/2000] ---
    Total Loss: 41866.3164
    MSE Component: 41.7591 (Weighted: 41759.1095)
    NLL Component: 107.1168
    Min Variance: 6.72e-07
    p1=0.258, p2=0.233
--- Iter [79/2000] ---
    Total Loss: 27488.9160
    MSE Component: 27.3935 (Weighted: 27393.4994)
    NLL Component: 95.3274
    Min Variance: 4.04e-06
    p1=0.258, p2=0.233
--- Iter [80/2000] ---
    Total Loss: 19012.4473
    MSE Component: 18.8725 (Weighted: 18872.4804)
    NLL Component: 139.8793
    Min Variance: 6.45e-06
    p1=0.258, p2=0.233

--- Validation at iteration 80 ---
    Average MSE: 341.3751, Average ANEES: 1766.0118
-----
--- Iter [81/2000] ---
    Total Loss: 30461.5352
    MSE Component: 30.2906 (Weighted: 30290.6017)
    NLL Component: 170.8453
    Min Variance: 5.38e-06
    p1=0.258, p2=0.233
--- Iter [82/2000] ---
    Total Loss: 57027.9922
    MSE Component: 56.8774 (Weighted: 56877.3956)
    NLL Component: 150.5061
    Min Variance: 1.51e-06
    p1=0.258, p2=0.233
--- Iter [83/2000] ---
    Total Loss: 44342.1172
    MSE Component: 44.1250 (Weighted: 44125.0153)
    NLL Component: 217.0114
    Min Variance: 7.59e-06
    p1=0.258, p2=0.233
--- Iter [84/2000] ---
    Total Loss: 22926.5449
    MSE Component: 22.7828 (Weighted: 22782.7721)
    NLL Component: 143.6855
    Min Variance: 5.69e-06
    p1=0.258, p2=0.233
--- Iter [85/2000] ---

```

```

Total Loss: 38909.7578
MSE Component: 38.7496 (Weighted: 38749.6452)
NLL Component: 160.0245
Min Variance: 4.79e-06
p1=0.258, p2=0.233
--- Iter [86/2000] ---
Total Loss: 36013.5547
MSE Component: 35.8699 (Weighted: 35869.8883)
NLL Component: 143.5776
Min Variance: 2.66e-06
p1=0.258, p2=0.233
--- Iter [87/2000] ---
Total Loss: 23268.0879
MSE Component: 23.1481 (Weighted: 23148.0675)
NLL Component: 119.9321
Min Variance: 1.65e-06
p1=0.258, p2=0.233
--- Iter [88/2000] ---
Total Loss: 25099.4102
MSE Component: 24.9619 (Weighted: 24961.9179)
NLL Component: 137.4035
Min Variance: 8.29e-06
p1=0.258, p2=0.233
--- Iter [89/2000] ---
Total Loss: 28830.1582
MSE Component: 28.6911 (Weighted: 28691.1297)
NLL Component: 138.9413
Min Variance: 1.23e-06
p1=0.257, p2=0.233
--- Iter [90/2000] ---
Total Loss: 42866.4961
MSE Component: 42.7783 (Weighted: 42778.2745)
NLL Component: 88.1312
Min Variance: 9.35e-07
p1=0.257, p2=0.233

--- Validation at iteration 90 ---
Average MSE: 966.1306, Average ANEES: 638.7076
-----
--- Iter [91/2000] ---
Total Loss: 28272.8555
MSE Component: 28.2053 (Weighted: 28205.3165)
NLL Component: 67.4520
Min Variance: 7.34e-06
p1=0.257, p2=0.233
--- Iter [92/2000] ---
Total Loss: 39146.4961
MSE Component: 39.0788 (Weighted: 39078.7735)

```

```

NLL Component: 67.6318
Min Variance: 9.08e-06
p1=0.257, p2=0.233
--- Iter [93/2000] ---
Total Loss: 45996.5547
MSE Component: 45.9065 (Weighted: 45906.4789)
NLL Component: 89.9842
Min Variance: 1.55e-06
p1=0.257, p2=0.233
--- Iter [94/2000] ---
Total Loss: 43452.3828
MSE Component: 43.3841 (Weighted: 43384.1476)
NLL Component: 68.1434
Min Variance: 5.85e-07
p1=0.257, p2=0.233
--- Iter [95/2000] ---
Total Loss: 58728.3555
MSE Component: 58.6520 (Weighted: 58652.0348)
NLL Component: 76.2299
Min Variance: 9.07e-07
p1=0.257, p2=0.233
--- Iter [96/2000] ---
Total Loss: 30414.7715
MSE Component: 30.3473 (Weighted: 30347.2652)
NLL Component: 67.4178
Min Variance: 3.51e-06
p1=0.257, p2=0.233
--- Iter [97/2000] ---
Total Loss: 26408.6113
MSE Component: 26.2732 (Weighted: 26273.1724)
NLL Component: 135.3516
Min Variance: 2.07e-06
p1=0.257, p2=0.233
--- Iter [98/2000] ---
Total Loss: 30454.2012
MSE Component: 30.3806 (Weighted: 30380.6190)
NLL Component: 73.4937
Min Variance: 6.51e-06
p1=0.257, p2=0.233
--- Iter [99/2000] ---
Total Loss: 20498.6406
MSE Component: 20.4052 (Weighted: 20405.1514)
NLL Component: 93.4000
Min Variance: 2.87e-06
p1=0.257, p2=0.233
--- Iter [100/2000] ---
Total Loss: 27071.1582
MSE Component: 26.9705 (Weighted: 26970.4990)

```

```

NLL Component: 100.5708
Min Variance: 3.86e-06
p1=0.257, p2=0.233

--- Validation at iteration 100 ---
Average MSE: 311.8890, Average ANEES: 1687.1943
-----
--- Iter [101/2000] ---
Total Loss: 34611.2500
MSE Component: 34.4829 (Weighted: 34482.8949)
NLL Component: 128.2665
Min Variance: 6.74e-07
p1=0.257, p2=0.233
--- Iter [102/2000] ---
Total Loss: 36128.1328
MSE Component: 36.0201 (Weighted: 36020.1378)
NLL Component: 107.9078
Min Variance: 3.73e-06
p1=0.257, p2=0.233
--- Iter [103/2000] ---
Total Loss: 51120.2422
MSE Component: 50.9846 (Weighted: 50984.6230)
NLL Component: 135.5303
Min Variance: 9.94e-07
p1=0.257, p2=0.233
--- Iter [104/2000] ---
Total Loss: 19390.6465
MSE Component: 19.3083 (Weighted: 19308.2752)
NLL Component: 82.2824
Min Variance: 8.13e-06
p1=0.257, p2=0.233
--- Iter [105/2000] ---
Total Loss: 20950.7070
MSE Component: 20.8599 (Weighted: 20859.8785)
NLL Component: 90.7405
Min Variance: 6.21e-07
p1=0.257, p2=0.233
--- Iter [106/2000] ---
Total Loss: 19642.6758
MSE Component: 19.5788 (Weighted: 19578.8078)
NLL Component: 63.7793
Min Variance: 8.71e-06
p1=0.257, p2=0.233
--- Iter [107/2000] ---
Total Loss: 18763.5762
MSE Component: 18.6994 (Weighted: 18699.4209)
NLL Component: 64.0671
Min Variance: 3.68e-06

```



```

    p1=0.257, p2=0.233
--- Iter [108/2000] ---
    Total Loss: 29026.7227
    MSE Component: 28.9640 (Weighted: 28963.9893)
    NLL Component: 62.6466
    Min Variance: 2.00e-06
    p1=0.257, p2=0.233
--- Iter [109/2000] ---
    Total Loss: 27565.3809
    MSE Component: 27.5104 (Weighted: 27510.3683)
    NLL Component: 54.9243
    Min Variance: 2.65e-06
    p1=0.257, p2=0.233
--- Iter [110/2000] ---
    Total Loss: 36589.3906
    MSE Component: 36.5390 (Weighted: 36538.9786)
    NLL Component: 50.3192
    Min Variance: 7.06e-06
    p1=0.257, p2=0.233

--- Validation at iteration 110 ---
    Average MSE: 847.2838, Average ANEES: 643.2669
-----
--- Iter [111/2000] ---
    Total Loss: 17124.0840
    MSE Component: 17.0737 (Weighted: 17073.7095)
    NLL Component: 50.2878
    Min Variance: 2.09e-06
    p1=0.257, p2=0.233
--- Iter [112/2000] ---
    Total Loss: 24730.1855
    MSE Component: 24.6826 (Weighted: 24682.5790)
    NLL Component: 47.5187
    Min Variance: 1.48e-06
    p1=0.257, p2=0.233
--- Iter [113/2000] ---
    Total Loss: 26553.3027
    MSE Component: 26.4990 (Weighted: 26498.9624)
    NLL Component: 54.2524
    Min Variance: 6.66e-06
    p1=0.257, p2=0.233
--- Iter [114/2000] ---
    Total Loss: 15655.6875
    MSE Component: 15.6018 (Weighted: 15601.7828)
    NLL Component: 53.8162
    Min Variance: 7.26e-06
    p1=0.257, p2=0.233
--- Iter [115/2000] ---

```

```

Total Loss: 16610.6055
MSE Component: 16.5476 (Weighted: 16547.5922)
NLL Component: 62.9257
Min Variance: 4.04e-06
p1=0.257, p2=0.233
--- Iter [116/2000] ---
Total Loss: 14962.3438
MSE Component: 14.9009 (Weighted: 14900.8865)
NLL Component: 61.3695
Min Variance: 8.49e-07
p1=0.257, p2=0.233
--- Iter [117/2000] ---
Total Loss: 24677.3809
MSE Component: 24.6157 (Weighted: 24615.7246)
NLL Component: 61.5691
Min Variance: 7.44e-07
p1=0.257, p2=0.233
--- Iter [118/2000] ---
Total Loss: 15421.5635
MSE Component: 15.3666 (Weighted: 15366.5667)
NLL Component: 54.9093
Min Variance: 1.94e-06
p1=0.257, p2=0.233
--- Iter [119/2000] ---
Total Loss: 21461.5879
MSE Component: 21.3939 (Weighted: 21393.8828)
NLL Component: 67.6165
Min Variance: 4.69e-06
p1=0.257, p2=0.233
--- Iter [120/2000] ---
Total Loss: 12277.7988
MSE Component: 12.2261 (Weighted: 12226.0580)
NLL Component: 51.6537
Min Variance: 8.23e-06
p1=0.257, p2=0.233

--- Validation at iteration 120 ---
Average MSE: 357.9628, Average ANEES: 1112.2977
-----
--- Iter [121/2000] ---
Total Loss: 20026.0469
MSE Component: 19.9569 (Weighted: 19956.8539)
NLL Component: 69.1060
Min Variance: 4.32e-06
p1=0.257, p2=0.233
--- Iter [122/2000] ---
Total Loss: 18069.0605
MSE Component: 18.0256 (Weighted: 18025.5814)

```

```

NLL Component: 43.3903
Min Variance: 3.75e-06
p1=0.257, p2=0.233
--- Iter [123/2000] ---
Total Loss: 20996.5508
MSE Component: 20.9523 (Weighted: 20952.2705)
NLL Component: 44.1935
Min Variance: 7.01e-06
p1=0.257, p2=0.233
--- Iter [124/2000] ---
Total Loss: 15792.4600
MSE Component: 15.7362 (Weighted: 15736.1784)
NLL Component: 56.1933
Min Variance: 9.17e-07
p1=0.257, p2=0.233
--- Iter [125/2000] ---
Total Loss: 17296.7891
MSE Component: 17.2584 (Weighted: 17258.3523)
NLL Component: 38.3500
Min Variance: 3.16e-06
p1=0.257, p2=0.233
--- Iter [126/2000] ---
Total Loss: 24419.1406
MSE Component: 24.3809 (Weighted: 24380.8670)
NLL Component: 38.1856
Min Variance: 1.74e-06
p1=0.257, p2=0.233
--- Iter [127/2000] ---
Total Loss: 24418.7754
MSE Component: 24.3768 (Weighted: 24376.8387)
NLL Component: 41.8502
Min Variance: 1.46e-06
p1=0.257, p2=0.233
--- Iter [128/2000] ---
Total Loss: 15688.8926
MSE Component: 15.6425 (Weighted: 15642.4952)
NLL Component: 46.3093
Min Variance: 2.14e-06
p1=0.257, p2=0.233
--- Iter [129/2000] ---
Total Loss: 13644.7510
MSE Component: 13.6075 (Weighted: 13607.4619)
NLL Component: 37.2008
Min Variance: 9.15e-06
p1=0.257, p2=0.233
--- Iter [130/2000] ---
Total Loss: 14249.8232
MSE Component: 14.2077 (Weighted: 14207.7169)

```

NLL Component: 42.0183  
Min Variance: 7.50e-06  
p1=0.257, p2=0.233

--- Validation at iteration 130 ---

Average MSE: 365.2097, Average ANEES: 697.3024

-----  
--- Iter [131/2000] ---

Total Loss: 15654.0303  
MSE Component: 15.6068 (Weighted: 15606.8039)  
NLL Component: 47.1384  
Min Variance: 4.62e-06  
p1=0.257, p2=0.233

--- Iter [132/2000] ---

Total Loss: 12340.0234  
MSE Component: 12.2976 (Weighted: 12297.6141)  
NLL Component: 42.3211  
Min Variance: 1.64e-06  
p1=0.257, p2=0.233

--- Iter [133/2000] ---

Total Loss: 17280.0352  
MSE Component: 17.2341 (Weighted: 17234.1003)  
NLL Component: 45.8481  
Min Variance: 6.89e-06  
p1=0.257, p2=0.233

--- Iter [134/2000] ---

Total Loss: 13398.4238  
MSE Component: 13.3501 (Weighted: 13350.0671)  
NLL Component: 48.2686  
Min Variance: 1.93e-06  
p1=0.257, p2=0.233

--- Iter [135/2000] ---

Total Loss: 16600.9824  
MSE Component: 16.5621 (Weighted: 16562.1204)  
NLL Component: 38.7728  
Min Variance: 2.60e-06  
p1=0.257, p2=0.233

--- Iter [136/2000] ---

Total Loss: 14426.2617  
MSE Component: 14.3910 (Weighted: 14391.0408)  
NLL Component: 35.1325  
Min Variance: 7.95e-06  
p1=0.257, p2=0.233

--- Iter [137/2000] ---

Total Loss: 10968.1650  
MSE Component: 10.9259 (Weighted: 10925.9148)  
NLL Component: 42.1617  
Min Variance: 6.87e-06

```

    p1=0.257, p2=0.233
--- Iter [138/2000] ---
    Total Loss: 11930.8906
    MSE Component: 11.8896 (Weighted: 11889.6160)
    NLL Component: 41.1870
    Min Variance: 3.57e-06
    p1=0.257, p2=0.233
--- Iter [139/2000] ---
    Total Loss: 18219.2480
    MSE Component: 18.1814 (Weighted: 18181.4423)
    NLL Component: 37.7196
    Min Variance: 6.50e-06
    p1=0.257, p2=0.233
--- Iter [140/2000] ---
    Total Loss: 16871.9668
    MSE Component: 16.8340 (Weighted: 16833.9996)
    NLL Component: 37.8799
    Min Variance: 2.59e-06
    p1=0.257, p2=0.233

--- Validation at iteration 140 ---
    Average MSE: 394.9068, Average ANEES: 644.4827
-----
--- Iter [141/2000] ---
    Total Loss: 24981.9766
    MSE Component: 24.9452 (Weighted: 24945.1771)
    NLL Component: 36.7107
    Min Variance: 2.95e-06
    p1=0.257, p2=0.233
--- Iter [142/2000] ---
    Total Loss: 16019.9385
    MSE Component: 15.9882 (Weighted: 15988.1601)
    NLL Component: 31.6908
    Min Variance: 2.07e-06
    p1=0.257, p2=0.233
--- Iter [143/2000] ---
    Total Loss: 7280.3228
    MSE Component: 7.2424 (Weighted: 7242.3716)
    NLL Component: 37.8633
    Min Variance: 2.00e-06
    p1=0.257, p2=0.233
--- Iter [144/2000] ---
    Total Loss: 9825.3408
    MSE Component: 9.7903 (Weighted: 9790.2622)
    NLL Component: 34.9906
    Min Variance: 1.52e-05
    p1=0.257, p2=0.233
--- Iter [145/2000] ---

```

```

Total Loss: 13183.4600
MSE Component: 13.1502 (Weighted: 13150.2380)
NLL Component: 33.1335
Min Variance: 7.35e-06
p1=0.257, p2=0.233
--- Iter [146/2000] ---
Total Loss: 13682.3926
MSE Component: 13.6497 (Weighted: 13649.6983)
NLL Component: 32.6064
Min Variance: 3.72e-06
p1=0.257, p2=0.233
--- Iter [147/2000] ---
Total Loss: 18636.8281
MSE Component: 18.6026 (Weighted: 18602.6154)
NLL Component: 34.1257
Min Variance: 1.05e-05
p1=0.257, p2=0.233
--- Iter [148/2000] ---
Total Loss: 15088.5732
MSE Component: 15.0371 (Weighted: 15037.1141)
NLL Component: 51.3711
Min Variance: 3.62e-06
p1=0.257, p2=0.233
--- Iter [149/2000] ---
Total Loss: 16862.5098
MSE Component: 16.8308 (Weighted: 16830.8430)
NLL Component: 31.5775
Min Variance: 3.34e-06
p1=0.257, p2=0.233
--- Iter [150/2000] ---
Total Loss: 13450.1162
MSE Component: 13.4062 (Weighted: 13406.2061)
NLL Component: 43.8226
Min Variance: 4.27e-06
p1=0.257, p2=0.233

--- Validation at iteration 150 ---
Average MSE: 511.0608, Average ANEES: 824.7819
-----
--- Iter [151/2000] ---
Total Loss: 13532.7988
MSE Component: 13.4973 (Weighted: 13497.3192)
NLL Component: 35.3914
Min Variance: 2.56e-06
p1=0.257, p2=0.233
--- Iter [152/2000] ---
Total Loss: 9200.9053
MSE Component: 9.1666 (Weighted: 9166.6002)

```

```

NLL Component: 34.2172
Min Variance: 8.32e-06
p1=0.257, p2=0.233
--- Iter [153/2000] ---
Total Loss: 16658.1328
MSE Component: 16.6145 (Weighted: 16614.5306)
NLL Component: 43.5130
Min Variance: 1.05e-06
p1=0.257, p2=0.233
--- Iter [154/2000] ---
Total Loss: 12603.4199
MSE Component: 12.5691 (Weighted: 12569.1080)
NLL Component: 34.2237
Min Variance: 5.65e-06
p1=0.257, p2=0.233
--- Iter [155/2000] ---
Total Loss: 13993.8818
MSE Component: 13.9445 (Weighted: 13944.4952)
NLL Component: 49.2993
Min Variance: 2.63e-06
p1=0.257, p2=0.233
--- Iter [156/2000] ---
Total Loss: 14398.2627
MSE Component: 14.3555 (Weighted: 14355.5479)
NLL Component: 42.6269
Min Variance: 2.37e-05
p1=0.257, p2=0.233
--- Iter [157/2000] ---
Total Loss: 20321.9277
MSE Component: 20.2854 (Weighted: 20285.3699)
NLL Component: 36.4699
Min Variance: 4.71e-06
p1=0.257, p2=0.233
--- Iter [158/2000] ---
Total Loss: 18115.1855
MSE Component: 18.0734 (Weighted: 18073.3891)
NLL Component: 41.7093
Min Variance: 5.41e-06
p1=0.257, p2=0.233
--- Iter [159/2000] ---
Total Loss: 12901.2432
MSE Component: 12.8666 (Weighted: 12866.5571)
NLL Component: 34.5989
Min Variance: 1.91e-06
p1=0.257, p2=0.233
--- Iter [160/2000] ---
Total Loss: 9945.2656
MSE Component: 9.9082 (Weighted: 9908.2413)

```

```

NLL Component: 36.9364
Min Variance: 7.34e-06
p1=0.257, p2=0.233

--- Validation at iteration 160 ---
Average MSE: 366.4080, Average ANEES: 681.5052
-----
--- Iter [161/2000] ---
Total Loss: 8503.9131
MSE Component: 8.4712 (Weighted: 8471.2429)
NLL Component: 32.5819
Min Variance: 9.94e-06
p1=0.257, p2=0.233
--- Iter [162/2000] ---
Total Loss: 10571.7598
MSE Component: 10.5482 (Weighted: 10548.1644)
NLL Component: 23.5079
Min Variance: 1.40e-05
p1=0.257, p2=0.233
--- Iter [163/2000] ---
Total Loss: 15155.6621
MSE Component: 15.1188 (Weighted: 15118.7592)
NLL Component: 36.8152
Min Variance: 7.76e-06
p1=0.257, p2=0.233
--- Iter [164/2000] ---
Total Loss: 13009.6650
MSE Component: 12.9831 (Weighted: 12983.1343)
NLL Component: 26.4437
Min Variance: 9.63e-06
p1=0.257, p2=0.233
--- Iter [165/2000] ---
Total Loss: 20609.8887
MSE Component: 20.5767 (Weighted: 20576.7231)
NLL Component: 33.0791
Min Variance: 4.66e-06
p1=0.257, p2=0.233
--- Iter [166/2000] ---
Total Loss: 21583.2363
MSE Component: 21.5543 (Weighted: 21554.3137)
NLL Component: 28.8339
Min Variance: 4.16e-06
p1=0.257, p2=0.233
--- Iter [167/2000] ---
Total Loss: 18094.2695
MSE Component: 18.0635 (Weighted: 18063.5185)
NLL Component: 30.6645
Min Variance: 1.16e-06

```



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    p1=0.257, p2=0.233
--- Iter [168/2000] ---
    Total Loss: 10902.2412
    MSE Component: 10.8676 (Weighted: 10867.6128)
    NLL Component: 34.5398
    Min Variance: 2.32e-06
    p1=0.257, p2=0.233
--- Iter [169/2000] ---
    Total Loss: 8971.4854
    MSE Component: 8.9405 (Weighted: 8940.4688)
    NLL Component: 30.9288
    Min Variance: 1.05e-05
    p1=0.257, p2=0.233
--- Iter [170/2000] ---
    Total Loss: 10371.2129
    MSE Component: 10.3414 (Weighted: 10341.3658)
    NLL Component: 29.7591
    Min Variance: 1.02e-06
    p1=0.257, p2=0.233

--- Validation at iteration 170 ---
    Average MSE: 381.3537, Average ANEES: 807.5698
-----
--- Iter [171/2000] ---
    Total Loss: 10009.5303
    MSE Component: 9.9808 (Weighted: 9980.8187)
    NLL Component: 28.6241
    Min Variance: 3.12e-06
    p1=0.257, p2=0.233
--- Iter [172/2000] ---
    Total Loss: 8695.4824
    MSE Component: 8.6559 (Weighted: 8655.9057)
    NLL Component: 39.4893
    Min Variance: 2.00e-06
    p1=0.257, p2=0.233
--- Iter [173/2000] ---
    Total Loss: 12021.4111
    MSE Component: 11.9926 (Weighted: 11992.6128)
    NLL Component: 28.7102
    Min Variance: 1.14e-05
    p1=0.257, p2=0.233
--- Iter [174/2000] ---
    Total Loss: 8573.7461
    MSE Component: 8.5445 (Weighted: 8544.4536)
    NLL Component: 29.2039
    Min Variance: 6.79e-06
    p1=0.257, p2=0.233
--- Iter [175/2000] ---

```

```

Total Loss: 8831.7070
MSE Component: 8.8059 (Weighted: 8805.9120)
NLL Component: 25.7067
Min Variance: 4.98e-06
p1=0.257, p2=0.233
--- Iter [176/2000] ---
Total Loss: 13227.0488
MSE Component: 13.1980 (Weighted: 13198.0124)
NLL Component: 28.9487
Min Variance: 7.46e-06
p1=0.257, p2=0.233
--- Iter [177/2000] ---
Total Loss: 10323.6221
MSE Component: 10.2935 (Weighted: 10293.5352)
NLL Component: 29.9987
Min Variance: 2.81e-06
p1=0.257, p2=0.233
--- Iter [178/2000] ---
Total Loss: 10216.2520
MSE Component: 10.1889 (Weighted: 10188.9277)
NLL Component: 27.2362
Min Variance: 8.83e-06
p1=0.257, p2=0.233
--- Iter [179/2000] ---
Total Loss: 7322.2676
MSE Component: 7.2970 (Weighted: 7296.9980)
NLL Component: 25.1814
Min Variance: 7.00e-06
p1=0.257, p2=0.233
--- Iter [180/2000] ---
Total Loss: 7914.0654
MSE Component: 7.8906 (Weighted: 7890.5854)
NLL Component: 23.3923
Min Variance: 6.27e-06
p1=0.257, p2=0.233

--- Validation at iteration 180 ---
Average MSE: 351.3550, Average ANEES: 553.3976
-----
--- Iter [181/2000] ---
Total Loss: 9462.9004
MSE Component: 9.4365 (Weighted: 9436.5339)
NLL Component: 26.2782
Min Variance: 1.26e-05
p1=0.257, p2=0.233
--- Iter [182/2000] ---
Total Loss: 7473.3350
MSE Component: 7.4461 (Weighted: 7446.1045)

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NLL Component: 27.1426
Min Variance: 6.81e-06
p1=0.257, p2=0.233
--- Iter [183/2000] ---
Total Loss: 6443.8491
MSE Component: 6.4143 (Weighted: 6414.3257)
NLL Component: 29.4354
Min Variance: 1.96e-06
p1=0.257, p2=0.233
--- Iter [184/2000] ---
Total Loss: 7750.2700
MSE Component: 7.7201 (Weighted: 7720.0871)
NLL Component: 30.0952
Min Variance: 3.52e-06
p1=0.257, p2=0.233
--- Iter [185/2000] ---
Total Loss: 8460.4648
MSE Component: 8.4339 (Weighted: 8433.8980)
NLL Component: 26.4782
Min Variance: 5.26e-06
p1=0.257, p2=0.233
--- Iter [186/2000] ---
Total Loss: 10970.7441
MSE Component: 10.9429 (Weighted: 10942.8730)
NLL Component: 27.7831
Min Variance: 8.67e-06
p1=0.257, p2=0.233
--- Iter [187/2000] ---
Total Loss: 9024.4766
MSE Component: 8.9904 (Weighted: 8990.3927)
NLL Component: 33.9960
Min Variance: 3.40e-06
p1=0.257, p2=0.233
--- Iter [188/2000] ---
Total Loss: 8976.7461
MSE Component: 8.9446 (Weighted: 8944.6058)
NLL Component: 32.0530
Min Variance: 3.11e-06
p1=0.257, p2=0.233
--- Iter [189/2000] ---
Total Loss: 7548.1772
MSE Component: 7.5222 (Weighted: 7522.1720)
NLL Component: 25.9175
Min Variance: 1.06e-05
p1=0.257, p2=0.233
--- Iter [190/2000] ---
Total Loss: 6806.7612
MSE Component: 6.7832 (Weighted: 6783.1593)

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NLL Component: 23.5140
Min Variance: 6.27e-06
p1=0.257, p2=0.233

--- Validation at iteration 190 ---
Average MSE: 446.3239, Average ANEES: 451.3371
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [191/2000] ---
Total Loss: 8754.4805
MSE Component: 8.7367 (Weighted: 8736.7325)
NLL Component: 17.6605
Min Variance: 7.34e-06
p1=0.257, p2=0.233
--- Iter [192/2000] ---
Total Loss: 10826.5059
MSE Component: 10.8078 (Weighted: 10807.8279)
NLL Component: 18.5899
Min Variance: 4.16e-06
p1=0.257, p2=0.233
--- Iter [193/2000] ---
Total Loss: 10575.2891
MSE Component: 10.5546 (Weighted: 10554.5607)
NLL Component: 20.6409
Min Variance: 6.19e-06
p1=0.257, p2=0.233
--- Iter [194/2000] ---
Total Loss: 8245.7354
MSE Component: 8.2274 (Weighted: 8227.4122)
NLL Component: 18.2358
Min Variance: 7.86e-06
p1=0.257, p2=0.233
--- Iter [195/2000] ---
Total Loss: 9808.8018
MSE Component: 9.7858 (Weighted: 9785.7599)
NLL Component: 22.9538
Min Variance: 5.49e-06
p1=0.257, p2=0.233
--- Iter [196/2000] ---
Total Loss: 8019.0967
MSE Component: 7.9887 (Weighted: 7988.6608)
NLL Component: 30.3482
Min Variance: 4.95e-06
p1=0.257, p2=0.233
--- Iter [197/2000] ---
Total Loss: 8578.2227
MSE Component: 8.5487 (Weighted: 8548.6746)
NLL Component: 29.4599

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    Min Variance: 4.81e-06
    p1=0.257, p2=0.233
--- Iter [198/2000] ---
    Total Loss: 4614.6948
    MSE Component: 4.5893 (Weighted: 4589.2973)
    NLL Component: 25.3095
    Min Variance: 8.22e-06
    p1=0.257, p2=0.233
--- Iter [199/2000] ---
    Total Loss: 10507.0361
    MSE Component: 10.4772 (Weighted: 10477.1729)
    NLL Component: 29.7753
    Min Variance: 6.84e-06
    p1=0.257, p2=0.233
--- Iter [200/2000] ---
    Total Loss: 7282.3091
    MSE Component: 7.2557 (Weighted: 7255.7335)
    NLL Component: 26.4878
    Min Variance: 3.27e-06
    p1=0.257, p2=0.233

--- Validation at iteration 200 ---
    Average MSE: 344.6052, Average ANEES: 502.3636
-----
--- Iter [201/2000] ---
    Total Loss: 5947.1675
    MSE Component: 5.9222 (Weighted: 5922.1783)
    NLL Component: 24.9014
    Min Variance: 8.48e-06
    p1=0.257, p2=0.233
--- Iter [202/2000] ---
    Total Loss: 5908.6963
    MSE Component: 5.8827 (Weighted: 5882.6799)
    NLL Component: 25.9283
    Min Variance: 2.93e-06
    p1=0.257, p2=0.233
--- Iter [203/2000] ---
    Total Loss: 6118.1001
    MSE Component: 6.0932 (Weighted: 6093.1869)
    NLL Component: 24.8253
    Min Variance: 5.96e-06
    p1=0.257, p2=0.233
--- Iter [204/2000] ---
    Total Loss: 5177.0269
    MSE Component: 5.1569 (Weighted: 5156.9223)
    NLL Component: 20.0166
    Min Variance: 2.18e-05
    p1=0.257, p2=0.233

```

```

--- Iter [205/2000] ---
  Total Loss: 5690.8525
  MSE Component: 5.6689 (Weighted: 5668.8972)
  NLL Component: 21.8677
  Min Variance: 6.54e-06
  p1=0.257, p2=0.233
--- Iter [206/2000] ---
  Total Loss: 5965.9893
  MSE Component: 5.9392 (Weighted: 5939.1742)
  NLL Component: 26.7269
  Min Variance: 3.70e-06
  p1=0.257, p2=0.233
--- Iter [207/2000] ---
  Total Loss: 6349.6953
  MSE Component: 6.3231 (Weighted: 6323.0510)
  NLL Component: 26.5565
  Min Variance: 1.22e-05
  p1=0.257, p2=0.233
--- Iter [208/2000] ---
  Total Loss: 6257.1021
  MSE Component: 6.2306 (Weighted: 6230.5722)
  NLL Component: 26.4421
  Min Variance: 5.63e-06
  p1=0.257, p2=0.233
--- Iter [209/2000] ---
  Total Loss: 6665.8154
  MSE Component: 6.6406 (Weighted: 6640.6159)
  NLL Component: 25.1116
  Min Variance: 4.64e-06
  p1=0.257, p2=0.233
--- Iter [210/2000] ---
  Total Loss: 4396.8726
  MSE Component: 4.3771 (Weighted: 4377.0514)
  NLL Component: 19.7334
  Min Variance: 1.21e-05
  p1=0.257, p2=0.233

--- Validation at iteration 210 ---
  Average MSE: 319.7701, Average ANEES: 424.5302
  >>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [211/2000] ---
  Total Loss: 3997.8782
  MSE Component: 3.9703 (Weighted: 3970.3104)
  NLL Component: 27.4796
  Min Variance: 4.23e-06
  p1=0.257, p2=0.233
--- Iter [212/2000] ---

```

```

Total Loss: 7060.8496
MSE Component: 7.0367 (Weighted: 7036.7308)
NLL Component: 24.0307
Min Variance: 7.34e-06
p1=0.257, p2=0.233
--- Iter [213/2000] ---
Total Loss: 6653.1992
MSE Component: 6.6276 (Weighted: 6627.5945)
NLL Component: 25.5172
Min Variance: 1.95e-06
p1=0.257, p2=0.233
--- Iter [214/2000] ---
Total Loss: 6579.8613
MSE Component: 6.5519 (Weighted: 6551.8823)
NLL Component: 27.8910
Min Variance: 8.55e-06
p1=0.257, p2=0.233
--- Iter [215/2000] ---
Total Loss: 7652.6289
MSE Component: 7.6292 (Weighted: 7629.1628)
NLL Component: 23.3782
Min Variance: 3.23e-06
p1=0.257, p2=0.233
--- Iter [216/2000] ---
Total Loss: 5932.1318
MSE Component: 5.9062 (Weighted: 5906.2357)
NLL Component: 25.8082
Min Variance: 5.73e-06
p1=0.257, p2=0.233
--- Iter [217/2000] ---
Total Loss: 6299.2837
MSE Component: 6.2694 (Weighted: 6269.4111)
NLL Component: 29.7848
Min Variance: 2.77e-06
p1=0.257, p2=0.233
--- Iter [218/2000] ---
Total Loss: 6795.1831
MSE Component: 6.7684 (Weighted: 6768.4169)
NLL Component: 26.6783
Min Variance: 2.27e-06
p1=0.257, p2=0.233
--- Iter [219/2000] ---
Total Loss: 6803.6499
MSE Component: 6.7826 (Weighted: 6782.5871)
NLL Component: 20.9749
Min Variance: 1.64e-05
p1=0.257, p2=0.233
--- Iter [220/2000] ---

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Total Loss: 7236.5391
MSE Component: 7.2180 (Weighted: 7218.0471)
NLL Component: 18.4039
Min Variance: 6.56e-06
p1=0.257, p2=0.233

--- Validation at iteration 220 ---
Average MSE: 363.8066, Average ANEES: 363.1567
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [221/2000] ---
Total Loss: 9239.2598
MSE Component: 9.2158 (Weighted: 9215.8451)
NLL Component: 23.3270
Min Variance: 1.06e-05
p1=0.257, p2=0.233
--- Iter [222/2000] ---
Total Loss: 16610.0410
MSE Component: 16.5911 (Weighted: 16591.1484)
NLL Component: 18.8047
Min Variance: 5.37e-06
p1=0.257, p2=0.233
--- Iter [223/2000] ---
Total Loss: 9298.5283
MSE Component: 9.2805 (Weighted: 9280.5300)
NLL Component: 17.9105
Min Variance: 6.41e-06
p1=0.257, p2=0.233
--- Iter [224/2000] ---
Total Loss: 11814.3369
MSE Component: 11.7915 (Weighted: 11791.4791)
NLL Component: 22.7698
Min Variance: 1.09e-05
p1=0.257, p2=0.233
--- Iter [225/2000] ---
Total Loss: 6151.3120
MSE Component: 6.1242 (Weighted: 6124.2104)
NLL Component: 27.0138
Min Variance: 3.02e-06
p1=0.257, p2=0.233
--- Iter [226/2000] ---
Total Loss: 6706.0190
MSE Component: 6.6805 (Weighted: 6680.5344)
NLL Component: 25.3972
Min Variance: 4.89e-06
p1=0.257, p2=0.233
--- Iter [227/2000] ---
Total Loss: 7564.9028

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MSE Component: 7.5323 (Weighted: 7532.3105)
NLL Component: 32.5044
Min Variance: 8.01e-06
p1=0.257, p2=0.233
--- Iter [228/2000] ---
Total Loss: 6988.7588
MSE Component: 6.9650 (Weighted: 6964.9525)
NLL Component: 23.7183
Min Variance: 1.82e-05
p1=0.257, p2=0.233
--- Iter [229/2000] ---
Total Loss: 6587.7617
MSE Component: 6.5661 (Weighted: 6566.1449)
NLL Component: 21.5290
Min Variance: 3.36e-06
p1=0.257, p2=0.233
--- Iter [230/2000] ---
Total Loss: 7038.8379
MSE Component: 7.0070 (Weighted: 7007.0114)
NLL Component: 31.7389
Min Variance: 4.64e-06
p1=0.257, p2=0.233

--- Validation at iteration 230 ---
Average MSE: 341.4761, Average ANEES: 489.9104
-----
--- Iter [231/2000] ---
Total Loss: 8376.1309
MSE Component: 8.3439 (Weighted: 8343.9388)
NLL Component: 32.1046
Min Variance: 7.45e-06
p1=0.257, p2=0.233
--- Iter [232/2000] ---
Total Loss: 6464.3496
MSE Component: 6.4388 (Weighted: 6438.8089)
NLL Component: 25.4525
Min Variance: 7.70e-06
p1=0.257, p2=0.233
--- Iter [233/2000] ---
Total Loss: 4978.0938
MSE Component: 4.9559 (Weighted: 4955.9417)
NLL Component: 22.0638
Min Variance: 8.05e-06
p1=0.257, p2=0.233
--- Iter [234/2000] ---
Total Loss: 5762.0640
MSE Component: 5.7360 (Weighted: 5735.9676)
NLL Component: 26.0081

```

```

    Min Variance: 5.47e-06
    p1=0.257, p2=0.233
--- Iter [235/2000] ---
    Total Loss: 6159.7437
    MSE Component: 6.1271 (Weighted: 6127.0924)
    NLL Component: 32.5635
    Min Variance: 4.76e-06
    p1=0.257, p2=0.233
--- Iter [236/2000] ---
    Total Loss: 4030.6238
    MSE Component: 4.0060 (Weighted: 4005.9719)
    NLL Component: 24.5638
    Min Variance: 7.31e-06
    p1=0.257, p2=0.233
--- Iter [237/2000] ---
    Total Loss: 3117.8640
    MSE Component: 3.0987 (Weighted: 3098.7267)
    NLL Component: 19.0490
    Min Variance: 8.84e-06
    p1=0.257, p2=0.233
--- Iter [238/2000] ---
    Total Loss: 6419.6567
    MSE Component: 6.3959 (Weighted: 6395.9336)
    NLL Component: 23.6353
    Min Variance: 2.43e-06
    p1=0.257, p2=0.233
--- Iter [239/2000] ---
    Total Loss: 8065.3218
    MSE Component: 8.0406 (Weighted: 8040.5760)
    NLL Component: 24.6578
    Min Variance: 6.48e-06
    p1=0.257, p2=0.233
--- Iter [240/2000] ---
    Total Loss: 6135.5010
    MSE Component: 6.1104 (Weighted: 6110.4131)
    NLL Component: 25.0002
    Min Variance: 8.01e-06
    p1=0.257, p2=0.233

--- Validation at iteration 240 ---
    Average MSE: 313.2762, Average ANEES: 426.6173
-----
--- Iter [241/2000] ---
    Total Loss: 5165.9478
    MSE Component: 5.1445 (Weighted: 5144.5460)
    NLL Component: 21.3141
    Min Variance: 6.82e-06
    p1=0.257, p2=0.233

```

```

--- Iter [242/2000] ---
Total Loss: 3965.2720
MSE Component: 3.9407 (Weighted: 3940.6996)
NLL Component: 24.4844
Min Variance: 1.07e-06
p1=0.257, p2=0.233
--- Iter [243/2000] ---
Total Loss: 5585.9785
MSE Component: 5.5610 (Weighted: 5561.0390)
NLL Component: 24.8516
Min Variance: 5.09e-06
p1=0.257, p2=0.233
--- Iter [244/2000] ---
Total Loss: 5203.8218
MSE Component: 5.1812 (Weighted: 5181.2482)
NLL Component: 22.4858
Min Variance: 1.20e-06
p1=0.257, p2=0.233
--- Iter [245/2000] ---
Total Loss: 4056.8474
MSE Component: 4.0327 (Weighted: 4032.6605)
NLL Component: 24.0989
Min Variance: 6.27e-06
p1=0.257, p2=0.233
--- Iter [246/2000] ---
Total Loss: 5677.8979
MSE Component: 5.6547 (Weighted: 5654.6669)
NLL Component: 23.1432
Min Variance: 1.67e-06
p1=0.257, p2=0.233
--- Iter [247/2000] ---
Total Loss: 4972.4897
MSE Component: 4.9468 (Weighted: 4946.7530)
NLL Component: 25.6487
Min Variance: 3.52e-06
p1=0.257, p2=0.233
--- Iter [248/2000] ---
Total Loss: 4731.7725
MSE Component: 4.7113 (Weighted: 4711.3466)
NLL Component: 20.3377
Min Variance: 4.12e-06
p1=0.257, p2=0.233
--- Iter [249/2000] ---
Total Loss: 5896.7173
MSE Component: 5.8737 (Weighted: 5873.6844)
NLL Component: 22.9448
Min Variance: 9.18e-07
p1=0.257, p2=0.233

```

```

--- Iter [250/2000] ---
Total Loss: 4235.3374
MSE Component: 4.2155 (Weighted: 4215.4994)
NLL Component: 19.7500
Min Variance: 6.55e-06
p1=0.256, p2=0.233

--- Validation at iteration 250 ---
Average MSE: 281.6511, Average ANEES: 412.8792
-----
--- Iter [251/2000] ---
Total Loss: 4700.2412
MSE Component: 4.6812 (Weighted: 4681.2463)
NLL Component: 18.9070
Min Variance: 1.26e-05
p1=0.256, p2=0.233
--- Iter [252/2000] ---
Total Loss: 6091.7788
MSE Component: 6.0541 (Weighted: 6054.1487)
NLL Component: 37.5423
Min Variance: 1.13e-05
p1=0.256, p2=0.233
--- Iter [253/2000] ---
Total Loss: 3689.6987
MSE Component: 3.6659 (Weighted: 3665.9296)
NLL Component: 23.6811
Min Variance: 1.19e-05
p1=0.256, p2=0.233
--- Iter [254/2000] ---
Total Loss: 4953.4663
MSE Component: 4.9306 (Weighted: 4930.5644)
NLL Component: 22.8141
Min Variance: 7.56e-06
p1=0.256, p2=0.233
--- Iter [255/2000] ---
Total Loss: 6003.3706
MSE Component: 5.9820 (Weighted: 5982.0065)
NLL Component: 21.2764
Min Variance: 3.46e-06
p1=0.256, p2=0.233
--- Iter [256/2000] ---
Total Loss: 4852.7515
MSE Component: 4.8270 (Weighted: 4826.9606)
NLL Component: 25.7030
Min Variance: 2.20e-06
p1=0.256, p2=0.233
--- Iter [257/2000] ---
Total Loss: 4815.2485

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MSE Component: 4.7893 (Weighted: 4789.3109)
NLL Component: 25.8498
Min Variance: 4.45e-06
p1=0.256, p2=0.233
--- Iter [258/2000] ---
Total Loss: 4368.2290
MSE Component: 4.3399 (Weighted: 4339.9086)
NLL Component: 28.2324
Min Variance: 5.76e-06
p1=0.256, p2=0.233
--- Iter [259/2000] ---
Total Loss: 5007.6191
MSE Component: 4.9835 (Weighted: 4983.4723)
NLL Component: 24.0591
Min Variance: 8.94e-06
p1=0.256, p2=0.233
--- Iter [260/2000] ---
Total Loss: 3870.5935
MSE Component: 3.8371 (Weighted: 3837.1246)
NLL Component: 33.3809
Min Variance: 2.90e-06
p1=0.256, p2=0.233

--- Validation at iteration 260 ---
Average MSE: 304.1767, Average ANEES: 382.3135
-----
--- Iter [261/2000] ---
Total Loss: 4691.4268
MSE Component: 4.6701 (Weighted: 4670.1365)
NLL Component: 21.2028
Min Variance: 8.09e-06
p1=0.256, p2=0.233
--- Iter [262/2000] ---
Total Loss: 4243.1904
MSE Component: 4.2171 (Weighted: 4217.1183)
NLL Component: 25.9845
Min Variance: 5.24e-06
p1=0.256, p2=0.233
--- Iter [263/2000] ---
Total Loss: 4484.0444
MSE Component: 4.4661 (Weighted: 4466.0730)
NLL Component: 17.8835
Min Variance: 1.23e-05
p1=0.256, p2=0.233
--- Iter [264/2000] ---
Total Loss: 3918.4238
MSE Component: 3.8966 (Weighted: 3896.6255)
NLL Component: 21.7103

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    Min Variance: 1.29e-06
    p1=0.256, p2=0.233
--- Iter [265/2000] ---
    Total Loss: 4465.9619
    MSE Component: 4.4446 (Weighted: 4444.6349)
    NLL Component: 21.2395
    Min Variance: 6.24e-06
    p1=0.256, p2=0.233
--- Iter [266/2000] ---
    Total Loss: 4490.3657
    MSE Component: 4.4707 (Weighted: 4470.6998)
    NLL Component: 19.5780
    Min Variance: 7.40e-06
    p1=0.256, p2=0.233
--- Iter [267/2000] ---
    Total Loss: 4897.2754
    MSE Component: 4.8699 (Weighted: 4869.8616)
    NLL Component: 27.3258
    Min Variance: 7.97e-06
    p1=0.256, p2=0.233
--- Iter [268/2000] ---
    Total Loss: 4978.6113
    MSE Component: 4.9528 (Weighted: 4952.7507)
    NLL Component: 25.7730
    Min Variance: 3.28e-06
    p1=0.256, p2=0.233
--- Iter [269/2000] ---
    Total Loss: 3608.6453
    MSE Component: 3.5861 (Weighted: 3586.0913)
    NLL Component: 22.4658
    Min Variance: 1.11e-05
    p1=0.256, p2=0.233
--- Iter [270/2000] ---
    Total Loss: 5467.6855
    MSE Component: 5.4370 (Weighted: 5437.0475)
    NLL Component: 30.5503
    Min Variance: 5.53e-06
    p1=0.256, p2=0.233

--- Validation at iteration 270 ---
    Average MSE: 305.6080, Average ANEES: 545.4064
-----
--- Iter [271/2000] ---
    Total Loss: 3990.7859
    MSE Component: 3.9674 (Weighted: 3967.4308)
    NLL Component: 23.2669
    Min Variance: 7.46e-06
    p1=0.256, p2=0.233

```

```

--- Iter [272/2000] ---
Total Loss: 5054.5347
MSE Component: 5.0317 (Weighted: 5031.7025)
NLL Component: 22.7442
Min Variance: 4.08e-06
p1=0.256, p2=0.233
--- Iter [273/2000] ---
Total Loss: 5906.3418
MSE Component: 5.8840 (Weighted: 5884.0146)
NLL Component: 22.2395
Min Variance: 1.64e-05
p1=0.256, p2=0.233
--- Iter [274/2000] ---
Total Loss: 3914.6379
MSE Component: 3.8915 (Weighted: 3891.5470)
NLL Component: 23.0029
Min Variance: 8.08e-06
p1=0.256, p2=0.233
--- Iter [275/2000] ---
Total Loss: 4165.5615
MSE Component: 4.1328 (Weighted: 4132.7524)
NLL Component: 32.7211
Min Variance: 4.41e-06
p1=0.256, p2=0.233
--- Iter [276/2000] ---
Total Loss: 4340.3384
MSE Component: 4.3204 (Weighted: 4320.3611)
NLL Component: 19.8891
Min Variance: 1.31e-05
p1=0.256, p2=0.233
--- Iter [277/2000] ---
Total Loss: 5765.6968
MSE Component: 5.7444 (Weighted: 5744.4305)
NLL Component: 21.1782
Min Variance: 1.13e-05
p1=0.256, p2=0.233
--- Iter [278/2000] ---
Total Loss: 7788.5874
MSE Component: 7.7678 (Weighted: 7767.7650)
NLL Component: 20.7343
Min Variance: 5.70e-06
p1=0.256, p2=0.233
--- Iter [279/2000] ---
Total Loss: 5353.3027
MSE Component: 5.3298 (Weighted: 5329.8025)
NLL Component: 23.4123
Min Variance: 6.15e-06
p1=0.256, p2=0.233

```

```

--- Iter [280/2000] ---
Total Loss: 3423.0051
MSE Component: 3.3983 (Weighted: 3398.2737)
NLL Component: 24.6433
Min Variance: 3.29e-06
p1=0.256, p2=0.233

--- Validation at iteration 280 ---
Average MSE: 289.0058, Average ANEES: 428.8951
-----
--- Iter [281/2000] ---
Total Loss: 6566.3062
MSE Component: 6.5354 (Weighted: 6535.4214)
NLL Component: 30.7970
Min Variance: 4.81e-06
p1=0.256, p2=0.233
--- Iter [282/2000] ---
Total Loss: 13900.4785
MSE Component: 13.8772 (Weighted: 13877.1696)
NLL Component: 23.2209
Min Variance: 9.79e-06
p1=0.256, p2=0.233
--- Iter [283/2000] ---
Total Loss: 11622.1689
MSE Component: 11.5895 (Weighted: 11589.4814)
NLL Component: 32.5994
Min Variance: 4.27e-06
p1=0.256, p2=0.233
--- Iter [284/2000] ---
Total Loss: 10153.3770
MSE Component: 10.1248 (Weighted: 10124.7702)
NLL Component: 28.5189
Min Variance: 6.89e-06
p1=0.256, p2=0.233
--- Iter [285/2000] ---
Total Loss: 13030.1934
MSE Component: 13.0001 (Weighted: 13000.0973)
NLL Component: 30.0080
Min Variance: 5.24e-06
p1=0.256, p2=0.233
--- Iter [286/2000] ---
Total Loss: 6137.9014
MSE Component: 6.1118 (Weighted: 6111.7725)
NLL Component: 26.0408
Min Variance: 1.00e-05
p1=0.256, p2=0.233
--- Iter [287/2000] ---
Total Loss: 3883.5615

```



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MSE Component: 3.8518 (Weighted: 3851.7792)
NLL Component: 31.6940
Min Variance: 3.77e-06
p1=0.256, p2=0.233
--- Iter [288/2000] ---
Total Loss: 12501.1748
MSE Component: 12.4784 (Weighted: 12478.3850)
NLL Component: 22.7017
Min Variance: 3.38e-06
p1=0.256, p2=0.233
--- Iter [289/2000] ---
Total Loss: 23711.1641
MSE Component: 23.6955 (Weighted: 23695.4918)
NLL Component: 15.5839
Min Variance: 9.58e-06
p1=0.256, p2=0.233
--- Iter [290/2000] ---
Total Loss: 18698.0879
MSE Component: 18.6793 (Weighted: 18679.3175)
NLL Component: 18.6818
Min Variance: 2.03e-06
p1=0.256, p2=0.233

--- Validation at iteration 290 ---
Average MSE: 437.6534, Average ANEES: 271.2888
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [291/2000] ---
Total Loss: 28920.1719
MSE Component: 28.8968 (Weighted: 28896.7686)
NLL Component: 23.3143
Min Variance: 1.70e-06
p1=0.256, p2=0.233
--- Iter [292/2000] ---
Total Loss: 25789.7676
MSE Component: 25.7685 (Weighted: 25768.4860)
NLL Component: 21.1928
Min Variance: 6.05e-06
p1=0.256, p2=0.233
--- Iter [293/2000] ---
Total Loss: 22908.2207
MSE Component: 22.8907 (Weighted: 22890.6841)
NLL Component: 17.4494
Min Variance: 1.19e-05
p1=0.256, p2=0.233
--- Iter [294/2000] ---
Total Loss: 24477.6934
MSE Component: 24.4576 (Weighted: 24457.6397)

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    NLL Component: 19.9650
    Min Variance: 8.64e-06
    p1=0.256, p2=0.233
--- Iter [295/2000] ---
    Total Loss: 10079.9502
    MSE Component: 10.0588 (Weighted: 10058.8140)
    NLL Component: 21.0481
    Min Variance: 6.76e-06
    p1=0.256, p2=0.233
--- Iter [296/2000] ---
    Total Loss: 3731.4807
    MSE Component: 3.7075 (Weighted: 3707.5095)
    NLL Component: 23.8831
    Min Variance: 1.10e-05
    p1=0.256, p2=0.233
--- Iter [297/2000] ---
    Total Loss: 6833.5947
    MSE Component: 6.8052 (Weighted: 6805.1705)
    NLL Component: 28.3364
    Min Variance: 9.74e-06
    p1=0.256, p2=0.233
--- Iter [298/2000] ---
    Total Loss: 11395.4404
    MSE Component: 11.3655 (Weighted: 11365.5205)
    NLL Component: 29.8318
    Min Variance: 2.16e-06
    p1=0.256, p2=0.233
--- Iter [299/2000] ---
    Total Loss: 8893.9883
    MSE Component: 8.8540 (Weighted: 8853.9505)
    NLL Component: 39.9506
    Min Variance: 5.12e-06
    p1=0.256, p2=0.233
--- Iter [300/2000] ---
    Total Loss: 28416.2930
    MSE Component: 28.3834 (Weighted: 28383.4114)
    NLL Component: 32.7924
    Min Variance: 1.74e-05
    p1=0.256, p2=0.233

--- Validation at iteration 300 ---
    Average MSE: 299.7411, Average ANEES: 429.1583
-----
--- Iter [301/2000] ---
    Total Loss: 22088.0234
    MSE Component: 22.0568 (Weighted: 22056.8485)
    NLL Component: 31.0869
    Min Variance: 4.82e-06

```

```

p1=0.256, p2=0.233
--- Iter [302/2000] ---
Total Loss: 10424.7861
MSE Component: 10.3893 (Weighted: 10389.2746)
NLL Component: 35.4236
Min Variance: 5.35e-06
p1=0.256, p2=0.233
--- Iter [303/2000] ---
Total Loss: 10831.4561
MSE Component: 10.7981 (Weighted: 10798.0852)
NLL Component: 33.2833
Min Variance: 1.82e-06
p1=0.256, p2=0.233
--- Iter [304/2000] ---
Total Loss: 8414.9404
MSE Component: 8.3904 (Weighted: 8390.3723)
NLL Component: 24.4800
Min Variance: 1.19e-05
p1=0.256, p2=0.233
--- Iter [305/2000] ---
Total Loss: 4968.5488
MSE Component: 4.9504 (Weighted: 4950.4275)
NLL Component: 18.0333
Min Variance: 2.70e-06
p1=0.256, p2=0.233
--- Iter [306/2000] ---
Total Loss: 8302.0244
MSE Component: 8.2836 (Weighted: 8283.5712)
NLL Component: 18.3653
Min Variance: 4.53e-06
p1=0.256, p2=0.233
--- Iter [307/2000] ---
Total Loss: 9887.0752
MSE Component: 9.8730 (Weighted: 9872.9582)
NLL Component: 14.0296
Min Variance: 4.80e-06
p1=0.256, p2=0.233
--- Iter [308/2000] ---
Total Loss: 22896.1914
MSE Component: 22.8813 (Weighted: 22881.3419)
NLL Component: 14.7625
Min Variance: 8.18e-06
p1=0.256, p2=0.233
--- Iter [309/2000] ---
Total Loss: 24282.8379
MSE Component: 24.2685 (Weighted: 24268.4841)
NLL Component: 14.2657
Min Variance: 1.47e-05

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```

    p1=0.256, p2=0.233
--- Iter [310/2000] ---
    Total Loss: 17942.3848
    MSE Component: 17.9260 (Weighted: 17926.0254)
    NLL Component: 16.2710
    Min Variance: 1.13e-05
    p1=0.256, p2=0.233

--- Validation at iteration 310 ---
    Average MSE: 386.1080, Average ANEES: 243.1124
    >>> New best VALIDATION ANEES! Saving model. <<<
-----

--- Iter [311/2000] ---
    Total Loss: 9945.3428
    MSE Component: 9.9298 (Weighted: 9929.7943)
    NLL Component: 15.4610
    Min Variance: 1.01e-05
    p1=0.256, p2=0.233
--- Iter [312/2000] ---
    Total Loss: 4778.3467
    MSE Component: 4.7585 (Weighted: 4758.5120)
    NLL Component: 19.7467
    Min Variance: 1.75e-06
    p1=0.256, p2=0.233
--- Iter [313/2000] ---
    Total Loss: 4540.2183
    MSE Component: 4.5221 (Weighted: 4522.0933)
    NLL Component: 18.0370
    Min Variance: 1.05e-05
    p1=0.256, p2=0.233
--- Iter [314/2000] ---
    Total Loss: 6520.6689
    MSE Component: 6.5018 (Weighted: 6501.7638)
    NLL Component: 18.8173
    Min Variance: 1.79e-05
    p1=0.256, p2=0.233
--- Iter [315/2000] ---
    Total Loss: 7290.2017
    MSE Component: 7.2643 (Weighted: 7264.3027)
    NLL Component: 25.8109
    Min Variance: 9.47e-06
    p1=0.256, p2=0.233
--- Iter [316/2000] ---
    Total Loss: 12204.9023
    MSE Component: 12.1733 (Weighted: 12173.2988)
    NLL Component: 31.5155
    Min Variance: 8.44e-06
    p1=0.256, p2=0.233

```

```

--- Iter [317/2000] ---
Total Loss: 11436.7363
MSE Component: 11.4042 (Weighted: 11404.1948)
NLL Component: 32.4534
Min Variance: 1.82e-06
p1=0.256, p2=0.233
--- Iter [318/2000] ---
Total Loss: 18088.8770
MSE Component: 18.0547 (Weighted: 18054.6684)
NLL Component: 34.1220
Min Variance: 9.45e-06
p1=0.256, p2=0.233
--- Iter [319/2000] ---
Total Loss: 10805.7803
MSE Component: 10.7704 (Weighted: 10770.4020)
NLL Component: 35.2904
Min Variance: 7.19e-06
p1=0.256, p2=0.233
--- Iter [320/2000] ---
Total Loss: 17968.2656
MSE Component: 17.9386 (Weighted: 17938.5910)
NLL Component: 29.5869
Min Variance: 3.57e-06
p1=0.256, p2=0.233

--- Validation at iteration 320 ---
Average MSE: 458.8394, Average ANEES: 322.7441
-----
--- Iter [321/2000] ---
Total Loss: 12269.7705
MSE Component: 12.2398 (Weighted: 12239.7795)
NLL Component: 29.9038
Min Variance: 6.03e-06
p1=0.256, p2=0.233
--- Iter [322/2000] ---
Total Loss: 13826.0703
MSE Component: 13.7919 (Weighted: 13791.8549)
NLL Component: 34.1276
Min Variance: 8.67e-06
p1=0.256, p2=0.233
--- Iter [323/2000] ---
Total Loss: 14536.4570
MSE Component: 14.5091 (Weighted: 14509.1267)
NLL Component: 27.2422
Min Variance: 1.11e-05
p1=0.256, p2=0.233
--- Iter [324/2000] ---
Total Loss: 7320.8037

```

```

MSE Component: 7.2949 (Weighted: 7294.8666)
NLL Component: 25.8492
Min Variance: 2.49e-06
p1=0.256, p2=0.233
--- Iter [325/2000] ---
Total Loss: 11930.0264
MSE Component: 11.9041 (Weighted: 11904.0546)
NLL Component: 25.8838
Min Variance: 7.97e-06
p1=0.256, p2=0.233
--- Iter [326/2000] ---
Total Loss: 5527.7905
MSE Component: 5.5044 (Weighted: 5504.4441)
NLL Component: 23.2584
Min Variance: 3.73e-06
p1=0.256, p2=0.233
--- Iter [327/2000] ---
Total Loss: 5449.0410
MSE Component: 5.4170 (Weighted: 5417.0365)
NLL Component: 31.9165
Min Variance: 6.01e-06
p1=0.256, p2=0.233
--- Iter [328/2000] ---
Total Loss: 14104.4902
MSE Component: 14.0799 (Weighted: 14079.8626)
NLL Component: 24.5405
Min Variance: 8.88e-06
p1=0.256, p2=0.233
--- Iter [329/2000] ---
Total Loss: 12617.6523
MSE Component: 12.5934 (Weighted: 12593.4410)
NLL Component: 24.1234
Min Variance: 1.15e-05
p1=0.256, p2=0.233
--- Iter [330/2000] ---
Total Loss: 11602.6709
MSE Component: 11.5773 (Weighted: 11577.3048)
NLL Component: 25.2788
Min Variance: 9.20e-06
p1=0.256, p2=0.233

--- Validation at iteration 330 ---
Average MSE: 324.6032, Average ANEES: 527.2002
-----
--- Iter [331/2000] ---
Total Loss: 6879.3032
MSE Component: 6.8546 (Weighted: 6854.6262)
NLL Component: 24.5891

```

```

Min Variance: 1.30e-05
p1=0.256, p2=0.233
--- Iter [332/2000] ---
Total Loss: 14937.7188
MSE Component: 14.9153 (Weighted: 14915.2632)
NLL Component: 22.3685
Min Variance: 7.06e-06
p1=0.256, p2=0.233
--- Iter [333/2000] ---
Total Loss: 8609.4658
MSE Component: 8.5875 (Weighted: 8587.4596)
NLL Component: 21.9183
Min Variance: 1.78e-06
p1=0.256, p2=0.233
--- Iter [334/2000] ---
Total Loss: 6818.7734
MSE Component: 6.8010 (Weighted: 6801.0302)
NLL Component: 17.6554
Min Variance: 8.44e-06
p1=0.256, p2=0.233
--- Iter [335/2000] ---
Total Loss: 4888.2939
MSE Component: 4.8676 (Weighted: 4867.5594)
NLL Component: 20.6463
Min Variance: 1.44e-05
p1=0.256, p2=0.233
--- Iter [336/2000] ---
Total Loss: 5531.7246
MSE Component: 5.5093 (Weighted: 5509.2583)
NLL Component: 22.3782
Min Variance: 1.68e-05
p1=0.256, p2=0.233
--- Iter [337/2000] ---
Total Loss: 7774.6279
MSE Component: 7.7586 (Weighted: 7758.6069)
NLL Component: 15.9331
Min Variance: 5.52e-06
p1=0.256, p2=0.233
--- Iter [338/2000] ---
Total Loss: 7615.5029
MSE Component: 7.5988 (Weighted: 7598.8145)
NLL Component: 16.6007
Min Variance: 7.68e-06
p1=0.256, p2=0.233
--- Iter [339/2000] ---
Total Loss: 8280.7480
MSE Component: 8.2610 (Weighted: 8261.0073)
NLL Component: 19.6534

```

```

    Min Variance: 1.10e-05
    p1=0.256, p2=0.233
--- Iter [340/2000] ---
    Total Loss: 5116.0762
    MSE Component: 5.0979 (Weighted: 5097.9466)
    NLL Component: 18.0415
    Min Variance: 1.27e-05
    p1=0.256, p2=0.233

--- Validation at iteration 340 ---
    Average MSE: 444.3239, Average ANEES: 367.4643
-----
--- Iter [341/2000] ---
    Total Loss: 6539.0864
    MSE Component: 6.5233 (Weighted: 6523.3355)
    NLL Component: 15.6629
    Min Variance: 1.30e-05
    p1=0.256, p2=0.233
--- Iter [342/2000] ---
    Total Loss: 3252.5620
    MSE Component: 3.2231 (Weighted: 3223.1410)
    NLL Component: 29.3332
    Min Variance: 5.52e-06
    p1=0.256, p2=0.233
--- Iter [343/2000] ---
    Total Loss: 4890.3765
    MSE Component: 4.8727 (Weighted: 4872.7202)
    NLL Component: 17.5685
    Min Variance: 1.21e-05
    p1=0.256, p2=0.233
--- Iter [344/2000] ---
    Total Loss: 4508.5220
    MSE Component: 4.4858 (Weighted: 4485.8112)
    NLL Component: 22.6229
    Min Variance: 2.08e-06
    p1=0.256, p2=0.233
--- Iter [345/2000] ---
    Total Loss: 5312.3618
    MSE Component: 5.2903 (Weighted: 5290.2741)
    NLL Component: 22.0002
    Min Variance: 5.26e-06
    p1=0.256, p2=0.233
--- Iter [346/2000] ---
    Total Loss: 5071.9194
    MSE Component: 5.0548 (Weighted: 5054.8277)
    NLL Component: 17.0039
    Min Variance: 5.75e-06
    p1=0.256, p2=0.233

```



```

--- Iter [347/2000] ---
Total Loss: 4757.2642
MSE Component: 4.7333 (Weighted: 4733.3193)
NLL Component: 23.8568
Min Variance: 1.02e-05
p1=0.256, p2=0.232
--- Iter [348/2000] ---
Total Loss: 4993.7222
MSE Component: 4.9641 (Weighted: 4964.1161)
NLL Component: 29.5181
Min Variance: 4.12e-06
p1=0.256, p2=0.232
--- Iter [349/2000] ---
Total Loss: 5722.4185
MSE Component: 5.7010 (Weighted: 5700.9749)
NLL Component: 21.3555
Min Variance: 4.06e-06
p1=0.256, p2=0.232
--- Iter [350/2000] ---
Total Loss: 4490.1709
MSE Component: 4.4703 (Weighted: 4470.3007)
NLL Component: 19.7824
Min Variance: 8.38e-06
p1=0.256, p2=0.232

--- Validation at iteration 350 ---
Average MSE: 448.6884, Average ANEES: 357.1410
-----
--- Iter [351/2000] ---
Total Loss: 5432.6812
MSE Component: 5.4132 (Weighted: 5413.2018)
NLL Component: 19.3914
Min Variance: 5.69e-06
p1=0.256, p2=0.232
--- Iter [352/2000] ---
Total Loss: 4690.2812
MSE Component: 4.6714 (Weighted: 4671.3824)
NLL Component: 18.8110
Min Variance: 4.98e-06
p1=0.256, p2=0.232
--- Iter [353/2000] ---
Total Loss: 4066.4939
MSE Component: 4.0485 (Weighted: 4048.4967)
NLL Component: 17.9093
Min Variance: 8.71e-06
p1=0.256, p2=0.232
--- Iter [354/2000] ---
Total Loss: 4678.6421

```

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MSE Component: 4.6587 (Weighted: 4658.7219)
NLL Component: 19.8326
Min Variance: 7.72e-06
p1=0.256, p2=0.232
--- Iter [355/2000] ---
Total Loss: 5178.9097
MSE Component: 5.1546 (Weighted: 5154.6478)
NLL Component: 24.1741
Min Variance: 5.58e-06
p1=0.256, p2=0.232
--- Iter [356/2000] ---
Total Loss: 4268.2588
MSE Component: 4.2403 (Weighted: 4240.2506)
NLL Component: 27.9205
Min Variance: 1.61e-06
p1=0.256, p2=0.232
--- Iter [357/2000] ---
Total Loss: 4087.7756
MSE Component: 4.0667 (Weighted: 4066.7267)
NLL Component: 20.9613
Min Variance: 6.02e-06
p1=0.256, p2=0.232
--- Iter [358/2000] ---
Total Loss: 3387.8223
MSE Component: 3.3701 (Weighted: 3370.1246)
NLL Component: 17.6099
Min Variance: 7.19e-06
p1=0.256, p2=0.232
--- Iter [359/2000] ---
Total Loss: 3853.2332
MSE Component: 3.8348 (Weighted: 3834.7571)
NLL Component: 18.3882
Min Variance: 4.16e-06
p1=0.256, p2=0.232
--- Iter [360/2000] ---
Total Loss: 3037.8079
MSE Component: 3.0175 (Weighted: 3017.4859)
NLL Component: 20.2342
Min Variance: 3.09e-06
p1=0.256, p2=0.232

--- Validation at iteration 360 ---
Average MSE: 336.9840, Average ANEES: 466.1041
-----
--- Iter [361/2000] ---
Total Loss: 6101.7476
MSE Component: 6.0823 (Weighted: 6082.3269)
NLL Component: 19.3331

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Min Variance: 7.42e-06
p1=0.256, p2=0.232
--- Iter [362/2000] ---
Total Loss: 4314.7227
MSE Component: 4.2913 (Weighted: 4291.2779)
NLL Component: 23.3570
Min Variance: 1.16e-05
p1=0.256, p2=0.232
--- Iter [363/2000] ---
Total Loss: 4489.3984
MSE Component: 4.4676 (Weighted: 4467.5565)
NLL Component: 21.7538
Min Variance: 5.32e-06
p1=0.256, p2=0.232
--- Iter [364/2000] ---
Total Loss: 3652.8674
MSE Component: 3.6310 (Weighted: 3631.0389)
NLL Component: 21.7406
Min Variance: 6.22e-06
p1=0.256, p2=0.232
--- Iter [365/2000] ---
Total Loss: 4873.7119
MSE Component: 4.8532 (Weighted: 4853.2281)
NLL Component: 20.3961
Min Variance: 7.70e-06
p1=0.256, p2=0.232
--- Iter [366/2000] ---
Total Loss: 4960.2246
MSE Component: 4.9408 (Weighted: 4940.8379)
NLL Component: 19.2986
Min Variance: 1.19e-05
p1=0.256, p2=0.232
--- Iter [367/2000] ---
Total Loss: 5972.8823
MSE Component: 5.9484 (Weighted: 5948.3929)
NLL Component: 24.4016
Min Variance: 4.03e-06
p1=0.256, p2=0.232
--- Iter [368/2000] ---
Total Loss: 5131.8579
MSE Component: 5.1137 (Weighted: 5113.6718)
NLL Component: 18.0983
Min Variance: 7.98e-06
p1=0.256, p2=0.232
--- Iter [369/2000] ---
Total Loss: 4926.2773
MSE Component: 4.9025 (Weighted: 4902.5054)
NLL Component: 23.6843

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    Min Variance: 6.82e-06
    p1=0.256, p2=0.232
--- Iter [370/2000] ---
    Total Loss: 4617.9937
    MSE Component: 4.5990 (Weighted: 4598.9900)
    NLL Component: 18.9162
    Min Variance: 2.30e-06
    p1=0.256, p2=0.232

--- Validation at iteration 370 ---
    Average MSE: 377.2398, Average ANEES: 386.4608
-----
--- Iter [371/2000] ---
    Total Loss: 5126.9443
    MSE Component: 5.1056 (Weighted: 5105.5899)
    NLL Component: 21.2667
    Min Variance: 9.85e-06
    p1=0.256, p2=0.232
--- Iter [372/2000] ---
    Total Loss: 5451.1235
    MSE Component: 5.4229 (Weighted: 5422.9450)
    NLL Component: 28.0906
    Min Variance: 8.18e-06
    p1=0.256, p2=0.232
--- Iter [373/2000] ---
    Total Loss: 5396.8408
    MSE Component: 5.3737 (Weighted: 5373.7478)
    NLL Component: 23.0047
    Min Variance: 8.98e-06
    p1=0.256, p2=0.232
--- Iter [374/2000] ---
    Total Loss: 5326.7827
    MSE Component: 5.3056 (Weighted: 5305.6417)
    NLL Component: 21.0533
    Min Variance: 2.43e-06
    p1=0.256, p2=0.232
--- Iter [375/2000] ---
    Total Loss: 6263.6372
    MSE Component: 6.2354 (Weighted: 6235.3501)
    NLL Component: 28.1992
    Min Variance: 4.81e-06
    p1=0.256, p2=0.232
--- Iter [376/2000] ---
    Total Loss: 5407.8643
    MSE Component: 5.3873 (Weighted: 5387.2752)
    NLL Component: 20.5008
    Min Variance: 5.97e-06
    p1=0.256, p2=0.232

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--- Iter [377/2000] ---
Total Loss: 3616.1792
MSE Component: 3.5894 (Weighted: 3589.3793)
NLL Component: 26.7120
Min Variance: 6.91e-06
p1=0.256, p2=0.232
--- Iter [378/2000] ---
Total Loss: 2966.7285
MSE Component: 2.9491 (Weighted: 2949.1181)
NLL Component: 17.5225
Min Variance: 1.20e-05
p1=0.256, p2=0.232
--- Iter [379/2000] ---
Total Loss: 3770.9355
MSE Component: 3.7446 (Weighted: 3744.6201)
NLL Component: 26.2275
Min Variance: 4.91e-06
p1=0.256, p2=0.232
--- Iter [380/2000] ---
Total Loss: 6814.6323
MSE Component: 6.7896 (Weighted: 6789.5656)
NLL Component: 24.9792
Min Variance: 5.71e-06
p1=0.256, p2=0.232

--- Validation at iteration 380 ---
Average MSE: 414.7470, Average ANEES: 270.3542
-----
--- Iter [381/2000] ---
Total Loss: 10446.0303
MSE Component: 10.4255 (Weighted: 10425.5066)
NLL Component: 20.4358
Min Variance: 1.37e-05
p1=0.256, p2=0.232
--- Iter [382/2000] ---
Total Loss: 9274.0078
MSE Component: 9.2560 (Weighted: 9255.9614)
NLL Component: 17.9589
Min Variance: 3.16e-06
p1=0.256, p2=0.232
--- Iter [383/2000] ---
Total Loss: 4805.4619
MSE Component: 4.7843 (Weighted: 4784.3323)
NLL Component: 21.0420
Min Variance: 1.83e-06
p1=0.256, p2=0.232
--- Iter [384/2000] ---
Total Loss: 2927.8726

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MSE Component: 2.9085 (Weighted: 2908.5429)
NLL Component: 19.2417
Min Variance: 1.27e-05
p1=0.256, p2=0.232
--- Iter [385/2000] ---
Total Loss: 3688.5640
MSE Component: 3.6685 (Weighted: 3668.5224)
NLL Component: 19.9536
Min Variance: 5.45e-06
p1=0.256, p2=0.232
--- Iter [386/2000] ---
Total Loss: 4513.1943
MSE Component: 4.4924 (Weighted: 4492.3592)
NLL Component: 20.7472
Min Variance: 4.68e-06
p1=0.256, p2=0.232
--- Iter [387/2000] ---
Total Loss: 4643.1299
MSE Component: 4.6140 (Weighted: 4614.0308)
NLL Component: 29.0113
Min Variance: 7.51e-06
p1=0.256, p2=0.232
--- Iter [388/2000] ---
Total Loss: 4272.7734
MSE Component: 4.2507 (Weighted: 4250.6986)
NLL Component: 21.9870
Min Variance: 6.50e-06
p1=0.256, p2=0.232
--- Iter [389/2000] ---
Total Loss: 4819.6494
MSE Component: 4.7940 (Weighted: 4794.0450)
NLL Component: 25.5168
Min Variance: 5.04e-06
p1=0.256, p2=0.232
--- Iter [390/2000] ---
Total Loss: 7197.6123
MSE Component: 7.1761 (Weighted: 7176.1255)
NLL Component: 21.3989
Min Variance: 2.66e-06
p1=0.256, p2=0.232

--- Validation at iteration 390 ---
Average MSE: 330.0077, Average ANEES: 348.5330
-----
--- Iter [391/2000] ---
Total Loss: 5214.5918
MSE Component: 5.1890 (Weighted: 5188.9668)
NLL Component: 25.5370

```

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Min Variance: 1.21e-05
p1=0.256, p2=0.232
--- Iter [392/2000] ---
Total Loss: 4847.8530
MSE Component: 4.8328 (Weighted: 4832.7565)
NLL Component: 15.0088
Min Variance: 8.82e-06
p1=0.256, p2=0.232
--- Iter [393/2000] ---
Total Loss: 2845.6140
MSE Component: 2.8202 (Weighted: 2820.1816)
NLL Component: 25.3446
Min Variance: 5.60e-06
p1=0.256, p2=0.232
--- Iter [394/2000] ---
Total Loss: 3357.9932
MSE Component: 3.3328 (Weighted: 3332.7646)
NLL Component: 25.1406
Min Variance: 5.54e-06
p1=0.256, p2=0.232
--- Iter [395/2000] ---
Total Loss: 4646.2256
MSE Component: 4.6282 (Weighted: 4628.2387)
NLL Component: 17.8987
Min Variance: 3.97e-06
p1=0.256, p2=0.232
--- Iter [396/2000] ---
Total Loss: 5158.1108
MSE Component: 5.1409 (Weighted: 5140.9278)
NLL Component: 17.0953
Min Variance: 1.42e-05
p1=0.256, p2=0.232
--- Iter [397/2000] ---
Total Loss: 5181.0542
MSE Component: 5.1545 (Weighted: 5154.5415)
NLL Component: 26.4247
Min Variance: 4.73e-06
p1=0.256, p2=0.232
--- Iter [398/2000] ---
Total Loss: 3799.4727
MSE Component: 3.7787 (Weighted: 3778.6806)
NLL Component: 20.7042
Min Variance: 2.48e-06
p1=0.256, p2=0.232
--- Iter [399/2000] ---
Total Loss: 4157.1577
MSE Component: 4.1269 (Weighted: 4126.9469)
NLL Component: 30.1230

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    Min Variance: 4.96e-06
    p1=0.256, p2=0.232
--- Iter [400/2000] ---
    Total Loss: 3633.0833
    MSE Component: 3.6038 (Weighted: 3603.8127)
    NLL Component: 29.1825
    Min Variance: 2.81e-06
    p1=0.256, p2=0.232

--- Validation at iteration 400 ---
    Average MSE: 335.5289, Average ANEES: 463.3801
-----
--- Iter [401/2000] ---
    Total Loss: 4001.0181
    MSE Component: 3.9783 (Weighted: 3978.3478)
    NLL Component: 22.5825
    Min Variance: 1.08e-05
    p1=0.256, p2=0.232
--- Iter [402/2000] ---
    Total Loss: 3515.1411
    MSE Component: 3.4924 (Weighted: 3492.3608)
    NLL Component: 22.6924
    Min Variance: 3.09e-06
    p1=0.256, p2=0.232
--- Iter [403/2000] ---
    Total Loss: 3578.9094
    MSE Component: 3.5543 (Weighted: 3554.3156)
    NLL Component: 24.5059
    Min Variance: 4.76e-06
    p1=0.256, p2=0.232
--- Iter [404/2000] ---
    Total Loss: 2852.0767
    MSE Component: 2.8298 (Weighted: 2829.8445)
    NLL Component: 22.1444
    Min Variance: 4.54e-06
    p1=0.256, p2=0.232
--- Iter [405/2000] ---
    Total Loss: 5448.1343
    MSE Component: 5.4260 (Weighted: 5425.9701)
    NLL Component: 22.0761
    Min Variance: 9.10e-06
    p1=0.256, p2=0.232
--- Iter [406/2000] ---
    Total Loss: 5579.2979
    MSE Component: 5.5554 (Weighted: 5555.3751)
    NLL Component: 23.8352
    Min Variance: 9.22e-06
    p1=0.256, p2=0.232

```



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--- Iter [407/2000] ---
Total Loss: 7705.5376
MSE Component: 7.6889 (Weighted: 7688.9172)
NLL Component: 16.5327
Min Variance: 7.62e-06
p1=0.256, p2=0.232
--- Iter [408/2000] ---
Total Loss: 6761.6367
MSE Component: 6.7413 (Weighted: 6741.2963)
NLL Component: 20.2527
Min Variance: 5.27e-06
p1=0.256, p2=0.232
--- Iter [409/2000] ---
Total Loss: 4637.2231
MSE Component: 4.6116 (Weighted: 4611.5808)
NLL Component: 25.5542
Min Variance: 4.02e-06
p1=0.256, p2=0.232
--- Iter [410/2000] ---
Total Loss: 3723.9673
MSE Component: 3.6989 (Weighted: 3698.8592)
NLL Component: 25.0202
Min Variance: 5.82e-06
p1=0.256, p2=0.232

--- Validation at iteration 410 ---
Average MSE: 323.5175, Average ANEES: 432.6911
-----
--- Iter [411/2000] ---
Total Loss: 3487.8718
MSE Component: 3.4665 (Weighted: 3466.4936)
NLL Component: 21.2904
Min Variance: 3.24e-06
p1=0.256, p2=0.232
--- Iter [412/2000] ---
Total Loss: 4346.8940
MSE Component: 4.3153 (Weighted: 4315.3458)
NLL Component: 31.4606
Min Variance: 2.53e-06
p1=0.256, p2=0.232
--- Iter [413/2000] ---
Total Loss: 3875.2627
MSE Component: 3.8513 (Weighted: 3851.3081)
NLL Component: 23.8667
Min Variance: 2.04e-06
p1=0.256, p2=0.232
--- Iter [414/2000] ---
Total Loss: 4768.1157

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MSE Component: 4.7456 (Weighted: 4745.5983)
NLL Component: 22.4299
Min Variance: 5.12e-06
p1=0.256, p2=0.232
--- Iter [415/2000] ---
Total Loss: 3956.1472
MSE Component: 3.9343 (Weighted: 3934.3486)
NLL Component: 21.7107
Min Variance: 6.60e-06
p1=0.256, p2=0.232
--- Iter [416/2000] ---
Total Loss: 2693.6084
MSE Component: 2.6763 (Weighted: 2676.3124)
NLL Component: 17.2079
Min Variance: 1.38e-06
p1=0.256, p2=0.232
--- Iter [417/2000] ---
Total Loss: 3586.0029
MSE Component: 3.5609 (Weighted: 3560.9417)
NLL Component: 24.9733
Min Variance: 3.65e-06
p1=0.256, p2=0.232
--- Iter [418/2000] ---
Total Loss: 3334.4434
MSE Component: 3.3167 (Weighted: 3316.6504)
NLL Component: 17.7051
Min Variance: 4.59e-06
p1=0.256, p2=0.232
--- Iter [419/2000] ---
Total Loss: 3970.6877
MSE Component: 3.9489 (Weighted: 3948.9300)
NLL Component: 21.6699
Min Variance: 5.47e-06
p1=0.256, p2=0.232
--- Iter [420/2000] ---
Total Loss: 3974.7515
MSE Component: 3.9466 (Weighted: 3946.6243)
NLL Component: 28.0394
Min Variance: 3.15e-06
p1=0.256, p2=0.232

--- Validation at iteration 420 ---
Average MSE: 361.9234, Average ANEES: 336.7747
-----
--- Iter [421/2000] ---
Total Loss: 3961.4036
MSE Component: 3.9459 (Weighted: 3945.8680)
NLL Component: 15.4478

```

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Min Variance: 4.13e-06
p1=0.256, p2=0.232
--- Iter [422/2000] ---
Total Loss: 3551.3389
MSE Component: 3.5278 (Weighted: 3527.7648)
NLL Component: 23.4860
Min Variance: 2.82e-06
p1=0.256, p2=0.232
--- Iter [423/2000] ---
Total Loss: 3188.0000
MSE Component: 3.1645 (Weighted: 3164.4959)
NLL Component: 23.4162
Min Variance: 1.26e-05
p1=0.256, p2=0.232
--- Iter [424/2000] ---
Total Loss: 3734.0178
MSE Component: 3.7184 (Weighted: 3718.4379)
NLL Component: 15.4920
Min Variance: 1.01e-05
p1=0.256, p2=0.232
--- Iter [425/2000] ---
Total Loss: 3438.2815
MSE Component: 3.4152 (Weighted: 3415.2071)
NLL Component: 22.9865
Min Variance: 4.21e-06
p1=0.256, p2=0.232
--- Iter [426/2000] ---
Total Loss: 3656.3511
MSE Component: 3.6257 (Weighted: 3625.6585)
NLL Component: 30.6048
Min Variance: 9.22e-06
p1=0.256, p2=0.232
--- Iter [427/2000] ---
Total Loss: 2719.5046
MSE Component: 2.6951 (Weighted: 2695.1206)
NLL Component: 24.2961
Min Variance: 3.91e-06
p1=0.256, p2=0.232
--- Iter [428/2000] ---
Total Loss: 5068.4429
MSE Component: 5.0508 (Weighted: 5050.7975)
NLL Component: 17.5576
Min Variance: 5.86e-06
p1=0.255, p2=0.232
--- Iter [429/2000] ---
Total Loss: 4454.1885
MSE Component: 4.4315 (Weighted: 4431.5395)
NLL Component: 22.5610

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    Min Variance: 4.09e-06
    p1=0.255, p2=0.232
--- Iter [430/2000] ---
    Total Loss: 2809.2817
    MSE Component: 2.7881 (Weighted: 2788.0902)
    NLL Component: 21.1034
    Min Variance: 1.08e-05
    p1=0.255, p2=0.232

--- Validation at iteration 430 ---
    Average MSE: 349.7628, Average ANEES: 438.9063
-----
--- Iter [431/2000] ---
    Total Loss: 4100.7935
    MSE Component: 4.0719 (Weighted: 4071.8513)
    NLL Component: 28.8544
    Min Variance: 5.02e-06
    p1=0.255, p2=0.232
--- Iter [432/2000] ---
    Total Loss: 2021.9856
    MSE Component: 2.0055 (Weighted: 2005.4824)
    NLL Component: 16.4152
    Min Variance: 8.10e-06
    p1=0.255, p2=0.232
--- Iter [433/2000] ---
    Total Loss: 3359.5427
    MSE Component: 3.3339 (Weighted: 3333.8852)
    NLL Component: 25.5697
    Min Variance: 8.86e-06
    p1=0.255, p2=0.232
--- Iter [434/2000] ---
    Total Loss: 2399.2935
    MSE Component: 2.3785 (Weighted: 2378.4773)
    NLL Component: 20.7283
    Min Variance: 1.39e-05
    p1=0.255, p2=0.232
--- Iter [435/2000] ---
    Total Loss: 3925.8694
    MSE Component: 3.8993 (Weighted: 3899.2889)
    NLL Component: 26.4927
    Min Variance: 1.29e-05
    p1=0.255, p2=0.232
--- Iter [436/2000] ---
    Total Loss: 3424.4480
    MSE Component: 3.4049 (Weighted: 3404.8891)
    NLL Component: 19.4710
    Min Variance: 5.75e-06
    p1=0.255, p2=0.232

```

```

--- Iter [437/2000] ---
Total Loss: 3146.2610
MSE Component: 3.1298 (Weighted: 3129.8442)
NLL Component: 16.3288
Min Variance: 3.98e-06
p1=0.255, p2=0.232
--- Iter [438/2000] ---
Total Loss: 4002.3884
MSE Component: 3.9791 (Weighted: 3979.0778)
NLL Component: 23.2227
Min Variance: 2.94e-06
p1=0.255, p2=0.232
--- Iter [439/2000] ---
Total Loss: 3366.4766
MSE Component: 3.3514 (Weighted: 3351.4042)
NLL Component: 14.9844
Min Variance: 9.42e-06
p1=0.255, p2=0.232
--- Iter [440/2000] ---
Total Loss: 3965.4185
MSE Component: 3.9435 (Weighted: 3943.5437)
NLL Component: 21.7870
Min Variance: 7.92e-06
p1=0.255, p2=0.232

--- Validation at iteration 440 ---
Average MSE: 355.3252, Average ANEES: 408.7149
-----
--- Iter [441/2000] ---
Total Loss: 3476.0969
MSE Component: 3.4531 (Weighted: 3453.0559)
NLL Component: 22.9531
Min Variance: 7.21e-06
p1=0.255, p2=0.232
--- Iter [442/2000] ---
Total Loss: 3774.8784
MSE Component: 3.7481 (Weighted: 3748.1492)
NLL Component: 26.6413
Min Variance: 4.28e-06
p1=0.255, p2=0.232
--- Iter [443/2000] ---
Total Loss: 2622.3174
MSE Component: 2.6029 (Weighted: 2602.8798)
NLL Component: 19.3496
Min Variance: 6.94e-06
p1=0.255, p2=0.232
--- Iter [444/2000] ---
Total Loss: 2510.1504

```

```

MSE Component: 2.4862 (Weighted: 2486.2006)
NLL Component: 23.8619
Min Variance: 5.41e-06
p1=0.255, p2=0.232
--- Iter [445/2000] ---
Total Loss: 3806.6694
MSE Component: 3.7848 (Weighted: 3784.8423)
NLL Component: 21.7393
Min Variance: 4.51e-06
p1=0.255, p2=0.232
--- Iter [446/2000] ---
Total Loss: 3038.7190
MSE Component: 3.0100 (Weighted: 3009.9740)
NLL Component: 28.6571
Min Variance: 4.49e-06
p1=0.255, p2=0.232
--- Iter [447/2000] ---
Total Loss: 2623.1587
MSE Component: 2.6015 (Weighted: 2601.5100)
NLL Component: 21.5608
Min Variance: 4.44e-06
p1=0.255, p2=0.232
--- Iter [448/2000] ---
Total Loss: 2790.0354
MSE Component: 2.7735 (Weighted: 2773.5088)
NLL Component: 16.4386
Min Variance: 1.50e-05
p1=0.255, p2=0.232
--- Iter [449/2000] ---
Total Loss: 4225.7031
MSE Component: 4.1978 (Weighted: 4197.8106)
NLL Component: 27.8047
Min Variance: 7.62e-06
p1=0.255, p2=0.232
--- Iter [450/2000] ---
Total Loss: 3427.6467
MSE Component: 3.4085 (Weighted: 3408.5412)
NLL Component: 19.0177
Min Variance: 1.30e-05
p1=0.255, p2=0.232

--- Validation at iteration 450 ---
Average MSE: 321.1517, Average ANEES: 396.6432
-----
--- Iter [451/2000] ---
Total Loss: 3838.9775
MSE Component: 3.8186 (Weighted: 3818.6309)
NLL Component: 20.2588

```

```

Min Variance: 1.52e-06
p1=0.255, p2=0.232
--- Iter [452/2000] ---
Total Loss: 3787.4329
MSE Component: 3.7632 (Weighted: 3763.2482)
NLL Component: 24.0966
Min Variance: 6.53e-06
p1=0.255, p2=0.232
--- Iter [453/2000] ---
Total Loss: 3252.5530
MSE Component: 3.2308 (Weighted: 3230.8424)
NLL Component: 21.6228
Min Variance: 6.20e-06
p1=0.255, p2=0.232
--- Iter [454/2000] ---
Total Loss: 2856.6873
MSE Component: 2.8378 (Weighted: 2837.7903)
NLL Component: 18.8091
Min Variance: 1.09e-05
p1=0.255, p2=0.232
--- Iter [455/2000] ---
Total Loss: 2998.3950
MSE Component: 2.9777 (Weighted: 2977.7448)
NLL Component: 20.5622
Min Variance: 1.24e-05
p1=0.255, p2=0.232
--- Iter [456/2000] ---
Total Loss: 3048.7917
MSE Component: 3.0263 (Weighted: 3026.2923)
NLL Component: 22.4115
Min Variance: 6.03e-06
p1=0.255, p2=0.232
--- Iter [457/2000] ---
Total Loss: 3006.9941
MSE Component: 2.9813 (Weighted: 2981.3416)
NLL Component: 25.5647
Min Variance: 6.56e-06
p1=0.255, p2=0.232
--- Iter [458/2000] ---
Total Loss: 2752.8037
MSE Component: 2.7284 (Weighted: 2728.3692)
NLL Component: 24.3466
Min Variance: 2.80e-06
p1=0.255, p2=0.232
--- Iter [459/2000] ---
Total Loss: 3335.8328
MSE Component: 3.3180 (Weighted: 3317.9927)
NLL Component: 17.7522

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    Min Variance: 3.83e-06
    p1=0.255, p2=0.232
--- Iter [460/2000] ---
    Total Loss: 4314.1035
    MSE Component: 4.2897 (Weighted: 4289.6972)
    NLL Component: 24.3183
    Min Variance: 3.72e-06
    p1=0.255, p2=0.232

--- Validation at iteration 460 ---
    Average MSE: 338.8893, Average ANEES: 373.2183
-----
--- Iter [461/2000] ---
    Total Loss: 4997.3984
    MSE Component: 4.9746 (Weighted: 4974.5646)
    NLL Component: 22.7460
    Min Variance: 7.46e-06
    p1=0.255, p2=0.232
--- Iter [462/2000] ---
    Total Loss: 2740.0547
    MSE Component: 2.7291 (Weighted: 2729.1210)
    NLL Component: 10.8458
    Min Variance: 1.48e-05
    p1=0.255, p2=0.232
--- Iter [463/2000] ---
    Total Loss: 4177.4673
    MSE Component: 4.1576 (Weighted: 4157.5985)
    NLL Component: 19.7808
    Min Variance: 8.59e-06
    p1=0.255, p2=0.232
--- Iter [464/2000] ---
    Total Loss: 3678.3022
    MSE Component: 3.6612 (Weighted: 3661.2360)
    NLL Component: 16.9783
    Min Variance: 5.87e-06
    p1=0.255, p2=0.232
--- Iter [465/2000] ---
    Total Loss: 4296.7529
    MSE Component: 4.2771 (Weighted: 4277.0829)
    NLL Component: 19.5820
    Min Variance: 9.04e-06
    p1=0.255, p2=0.232
--- Iter [466/2000] ---
    Total Loss: 3888.4072
    MSE Component: 3.8635 (Weighted: 3863.4818)
    NLL Component: 24.8377
    Min Variance: 2.33e-06
    p1=0.255, p2=0.232

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--- Iter [467/2000] ---
Total Loss: 3583.8271
MSE Component: 3.5548 (Weighted: 3554.8382)
NLL Component: 28.9012
Min Variance: 2.16e-06
p1=0.255, p2=0.232
--- Iter [468/2000] ---
Total Loss: 4075.0288
MSE Component: 4.0549 (Weighted: 4054.9197)
NLL Component: 20.0212
Min Variance: 3.47e-06
p1=0.255, p2=0.232
--- Iter [469/2000] ---
Total Loss: 2992.9104
MSE Component: 2.9675 (Weighted: 2967.4826)
NLL Component: 25.3398
Min Variance: 4.42e-06
p1=0.255, p2=0.232
--- Iter [470/2000] ---
Total Loss: 4052.4817
MSE Component: 4.0295 (Weighted: 4029.4867)
NLL Component: 22.9071
Min Variance: 6.87e-06
p1=0.255, p2=0.232

--- Validation at iteration 470 ---
Average MSE: 370.2803, Average ANEES: 363.1668
-----
--- Iter [471/2000] ---
Total Loss: 4827.4785
MSE Component: 4.8012 (Weighted: 4801.2252)
NLL Component: 26.1655
Min Variance: 3.39e-06
p1=0.255, p2=0.232
--- Iter [472/2000] ---
Total Loss: 5787.1953
MSE Component: 5.7673 (Weighted: 5767.2696)
NLL Component: 19.8377
Min Variance: 9.81e-06
p1=0.255, p2=0.232
--- Iter [473/2000] ---
Total Loss: 4137.3950
MSE Component: 4.1149 (Weighted: 4114.8648)
NLL Component: 22.4424
Min Variance: 5.43e-06
p1=0.255, p2=0.232
--- Iter [474/2000] ---
Total Loss: 3990.5615

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MSE Component: 3.9735 (Weighted: 3973.5339)
NLL Component: 16.9398
Min Variance: 5.89e-06
p1=0.255, p2=0.232
--- Iter [475/2000] ---
Total Loss: 2384.4727
MSE Component: 2.3667 (Weighted: 2366.7085)
NLL Component: 17.6762
Min Variance: 1.55e-05
p1=0.255, p2=0.232
--- Iter [476/2000] ---
Total Loss: 4159.6348
MSE Component: 4.1333 (Weighted: 4133.2855)
NLL Component: 26.2612
Min Variance: 4.17e-06
p1=0.255, p2=0.232
--- Iter [477/2000] ---
Total Loss: 4445.2456
MSE Component: 4.4260 (Weighted: 4425.9663)
NLL Component: 19.1915
Min Variance: 4.48e-06
p1=0.255, p2=0.232
--- Iter [478/2000] ---
Total Loss: 6000.2549
MSE Component: 5.9870 (Weighted: 5986.9504)
NLL Component: 13.2166
Min Variance: 1.49e-05
p1=0.255, p2=0.232
--- Iter [479/2000] ---
Total Loss: 5890.3096
MSE Component: 5.8677 (Weighted: 5867.7454)
NLL Component: 22.4759
Min Variance: 2.52e-06
p1=0.255, p2=0.232
--- Iter [480/2000] ---
Total Loss: 2734.7041
MSE Component: 2.7119 (Weighted: 2711.9403)
NLL Component: 22.6761
Min Variance: 1.14e-05
p1=0.255, p2=0.232

--- Validation at iteration 480 ---
Average MSE: 308.0545, Average ANEES: 512.8065
-----
--- Iter [481/2000] ---
Total Loss: 6944.3232
MSE Component: 6.9253 (Weighted: 6925.3449)
NLL Component: 18.8904

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Min Variance: 1.11e-05
p1=0.255, p2=0.232
--- Iter [482/2000] ---
Total Loss: 4804.2866
MSE Component: 4.7842 (Weighted: 4784.1592)
NLL Component: 20.0396
Min Variance: 9.44e-06
p1=0.255, p2=0.232
--- Iter [483/2000] ---
Total Loss: 2470.2141
MSE Component: 2.4463 (Weighted: 2446.3160)
NLL Component: 23.8102
Min Variance: 3.65e-06
p1=0.255, p2=0.232
--- Iter [484/2000] ---
Total Loss: 3426.6289
MSE Component: 3.4033 (Weighted: 3403.2903)
NLL Component: 23.2507
Min Variance: 6.06e-06
p1=0.255, p2=0.232
--- Iter [485/2000] ---
Total Loss: 5783.5957
MSE Component: 5.7646 (Weighted: 5764.5659)
NLL Component: 18.9418
Min Variance: 8.33e-06
p1=0.255, p2=0.232
--- Iter [486/2000] ---
Total Loss: 7837.3120
MSE Component: 7.8075 (Weighted: 7807.4737)
NLL Component: 29.7506
Min Variance: 6.42e-06
p1=0.255, p2=0.232
--- Iter [487/2000] ---
Total Loss: 9119.8262
MSE Component: 9.0908 (Weighted: 9090.8060)
NLL Component: 28.9325
Min Variance: 8.85e-07
p1=0.255, p2=0.232
--- Iter [488/2000] ---
Total Loss: 9938.4336
MSE Component: 9.9111 (Weighted: 9911.1395)
NLL Component: 27.2059
Min Variance: 1.26e-05
p1=0.255, p2=0.232
--- Iter [489/2000] ---
Total Loss: 10303.8408
MSE Component: 10.2772 (Weighted: 10277.2331)
NLL Component: 26.5193

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Min Variance: 7.90e-06
p1=0.255, p2=0.232
--- Iter [490/2000] ---
Total Loss: 7646.8916
MSE Component: 7.6187 (Weighted: 7618.6833)
NLL Component: 28.1204
Min Variance: 1.25e-05
p1=0.255, p2=0.232

--- Validation at iteration 490 ---
Average MSE: 355.8243, Average ANEES: 460.6268
-----
--- Iter [491/2000] ---
Total Loss: 6868.9033
MSE Component: 6.8385 (Weighted: 6838.4981)
NLL Component: 30.3173
Min Variance: 6.39e-06
p1=0.255, p2=0.232
--- Iter [492/2000] ---
Total Loss: 5205.0933
MSE Component: 5.1831 (Weighted: 5183.0506)
NLL Component: 21.9547
Min Variance: 5.38e-06
p1=0.255, p2=0.232
--- Iter [493/2000] ---
Total Loss: 4571.9409
MSE Component: 4.5344 (Weighted: 4534.3924)
NLL Component: 37.4605
Min Variance: 5.30e-06
p1=0.255, p2=0.232
--- Iter [494/2000] ---
Total Loss: 4684.3779
MSE Component: 4.6611 (Weighted: 4661.0579)
NLL Component: 23.2318
Min Variance: 1.27e-05
p1=0.255, p2=0.232
--- Iter [495/2000] ---
Total Loss: 4120.9482
MSE Component: 4.0977 (Weighted: 4097.7168)
NLL Component: 23.1436
Min Variance: 5.16e-06
p1=0.255, p2=0.232
--- Iter [496/2000] ---
Total Loss: 6147.3447
MSE Component: 6.1313 (Weighted: 6131.3400)
NLL Component: 15.9172
Min Variance: 1.01e-05
p1=0.255, p2=0.232

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--- Iter [497/2000] ---
Total Loss: 10838.2354
MSE Component: 10.8179 (Weighted: 10817.9455)
NLL Component: 20.2017
Min Variance: 5.80e-06
p1=0.255, p2=0.232
--- Iter [498/2000] ---
Total Loss: 14481.5400
MSE Component: 14.4627 (Weighted: 14462.6760)
NLL Component: 18.7760
Min Variance: 7.65e-06
p1=0.255, p2=0.232
--- Iter [499/2000] ---
Total Loss: 10097.8867
MSE Component: 10.0729 (Weighted: 10072.8884)
NLL Component: 24.9102
Min Variance: 2.38e-06
p1=0.255, p2=0.232
--- Iter [500/2000] ---
Total Loss: 10155.0430
MSE Component: 10.1352 (Weighted: 10135.1910)
NLL Component: 19.7641
Min Variance: 8.10e-06
p1=0.255, p2=0.232

--- Validation at iteration 500 ---
Average MSE: 296.7533, Average ANEES: 476.2235
-----
--- Iter [501/2000] ---
Total Loss: 6232.6631
MSE Component: 6.2124 (Weighted: 6212.3971)
NLL Component: 20.1784
Min Variance: 8.06e-06
p1=0.255, p2=0.232
--- Iter [502/2000] ---
Total Loss: 3915.8132
MSE Component: 3.8960 (Weighted: 3895.9560)
NLL Component: 19.7693
Min Variance: 4.19e-06
p1=0.255, p2=0.232
--- Iter [503/2000] ---
Total Loss: 3040.2000
MSE Component: 3.0227 (Weighted: 3022.7275)
NLL Component: 17.3845
Min Variance: 5.19e-06
p1=0.255, p2=0.232
--- Iter [504/2000] ---
Total Loss: 3150.4673

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MSE Component: 3.1332 (Weighted: 3133.1756)
NLL Component: 17.2039
Min Variance: 7.54e-06
p1=0.255, p2=0.232
--- Iter [505/2000] ---
Total Loss: 3829.0557
MSE Component: 3.7993 (Weighted: 3799.2895)
NLL Component: 29.6782
Min Variance: 1.13e-05
p1=0.255, p2=0.232
--- Iter [506/2000] ---
Total Loss: 7430.6260
MSE Component: 7.4027 (Weighted: 7402.6837)
NLL Component: 27.8544
Min Variance: 4.03e-06
p1=0.255, p2=0.232
--- Iter [507/2000] ---
Total Loss: 9063.3027
MSE Component: 9.0345 (Weighted: 9034.4734)
NLL Component: 28.7414
Min Variance: 4.92e-06
p1=0.255, p2=0.232
--- Iter [508/2000] ---
Total Loss: 6171.3770
MSE Component: 6.1474 (Weighted: 6147.4409)
NLL Component: 23.8481
Min Variance: 2.55e-06
p1=0.255, p2=0.232
--- Iter [509/2000] ---
Total Loss: 11516.9922
MSE Component: 11.4959 (Weighted: 11495.9116)
NLL Component: 20.9932
Min Variance: 8.76e-06
p1=0.255, p2=0.232
--- Iter [510/2000] ---
Total Loss: 8500.6934
MSE Component: 8.4753 (Weighted: 8475.2522)
NLL Component: 25.3535
Min Variance: 1.13e-05
p1=0.255, p2=0.232

--- Validation at iteration 510 ---
Average MSE: 341.5145, Average ANEES: 402.7683
-----
--- Iter [511/2000] ---
Total Loss: 5838.3945
MSE Component: 5.8080 (Weighted: 5808.0130)
NLL Component: 30.2936

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Min Variance: 6.19e-06
p1=0.255, p2=0.232
--- Iter [512/2000] ---
Total Loss: 8334.9912
MSE Component: 8.3100 (Weighted: 8309.9508)
NLL Component: 24.9521
Min Variance: 1.26e-05
p1=0.255, p2=0.232
--- Iter [513/2000] ---
Total Loss: 7798.2769
MSE Component: 7.7785 (Weighted: 7778.5330)
NLL Component: 19.6559
Min Variance: 6.69e-06
p1=0.255, p2=0.232
--- Iter [514/2000] ---
Total Loss: 5993.4985
MSE Component: 5.9677 (Weighted: 5967.7334)
NLL Component: 25.6771
Min Variance: 2.74e-06
p1=0.255, p2=0.232
--- Iter [515/2000] ---
Total Loss: 3075.1204
MSE Component: 3.0495 (Weighted: 3049.5243)
NLL Component: 25.5081
Min Variance: 6.98e-06
p1=0.255, p2=0.232
--- Iter [516/2000] ---
Total Loss: 3179.7527
MSE Component: 3.1605 (Weighted: 3160.4981)
NLL Component: 19.1669
Min Variance: 9.68e-06
p1=0.255, p2=0.232
--- Iter [517/2000] ---
Total Loss: 5078.6367
MSE Component: 5.0553 (Weighted: 5055.3427)
NLL Component: 23.2058
Min Variance: 6.15e-06
p1=0.255, p2=0.232
--- Iter [518/2000] ---
Total Loss: 4763.5493
MSE Component: 4.7412 (Weighted: 4741.2190)
NLL Component: 22.2423
Min Variance: 9.98e-06
p1=0.255, p2=0.232
--- Iter [519/2000] ---
Total Loss: 5055.3618
MSE Component: 5.0366 (Weighted: 5036.6454)
NLL Component: 18.6286

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    Min Variance: 4.53e-06
    p1=0.255, p2=0.232
--- Iter [520/2000] ---
    Total Loss: 8431.0859
    MSE Component: 8.4151 (Weighted: 8415.1478)
    NLL Component: 15.8507
    Min Variance: 1.31e-05
    p1=0.255, p2=0.232

--- Validation at iteration 520 ---
    Average MSE: 373.8008, Average ANEES: 403.5556
-----
--- Iter [521/2000] ---
    Total Loss: 7077.5254
    MSE Component: 7.0618 (Weighted: 7061.7638)
    NLL Component: 15.6736
    Min Variance: 1.28e-05
    p1=0.255, p2=0.232
--- Iter [522/2000] ---
    Total Loss: 2155.5271
    MSE Component: 2.1415 (Weighted: 2141.5069)
    NLL Component: 13.9324
    Min Variance: 1.56e-05
    p1=0.255, p2=0.232
--- Iter [523/2000] ---
    Total Loss: 5905.2910
    MSE Component: 5.8875 (Weighted: 5887.4531)
    NLL Component: 17.7498
    Min Variance: 5.53e-06
    p1=0.255, p2=0.232
--- Iter [524/2000] ---
    Total Loss: 3617.6372
    MSE Component: 3.5931 (Weighted: 3593.0929)
    NLL Component: 24.4563
    Min Variance: 1.22e-05
    p1=0.255, p2=0.232
--- Iter [525/2000] ---
    Total Loss: 4187.4922
    MSE Component: 4.1687 (Weighted: 4168.7455)
    NLL Component: 18.6586
    Min Variance: 5.67e-06
    p1=0.255, p2=0.232
--- Iter [526/2000] ---
    Total Loss: 3399.0652
    MSE Component: 3.3734 (Weighted: 3373.4112)
    NLL Component: 25.5662
    Min Variance: 6.24e-06
    p1=0.255, p2=0.232

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--- Iter [527/2000] ---
Total Loss: 3365.2351
MSE Component: 3.3402 (Weighted: 3340.1830)
NLL Component: 24.9640
Min Variance: 3.47e-06
p1=0.255, p2=0.232
--- Iter [528/2000] ---
Total Loss: 5484.4014
MSE Component: 5.4554 (Weighted: 5455.4262)
NLL Component: 28.8872
Min Variance: 9.26e-06
p1=0.255, p2=0.232
--- Iter [529/2000] ---
Total Loss: 4717.6294
MSE Component: 4.6914 (Weighted: 4691.3681)
NLL Component: 26.1733
Min Variance: 4.44e-06
p1=0.255, p2=0.232
--- Iter [530/2000] ---
Total Loss: 3930.9075
MSE Component: 3.9033 (Weighted: 3903.3468)
NLL Component: 27.4729
Min Variance: 4.76e-06
p1=0.255, p2=0.232

--- Validation at iteration 530 ---
Average MSE: 307.5410, Average ANEES: 557.2455
-----
--- Iter [531/2000] ---
Total Loss: 7225.1304
MSE Component: 7.1917 (Weighted: 7191.6590)
NLL Component: 33.3834
Min Variance: 4.17e-06
p1=0.255, p2=0.232
--- Iter [532/2000] ---
Total Loss: 5194.6895
MSE Component: 5.1718 (Weighted: 5171.7629)
NLL Component: 22.8383
Min Variance: 9.98e-06
p1=0.255, p2=0.232
--- Iter [533/2000] ---
Total Loss: 4226.4619
MSE Component: 4.2031 (Weighted: 4203.0730)
NLL Component: 23.3006
Min Variance: 1.12e-05
p1=0.255, p2=0.232
--- Iter [534/2000] ---
Total Loss: 4678.6699

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MSE Component: 4.6550 (Weighted: 4655.0131)
NLL Component: 23.5689
Min Variance: 7.74e-06
p1=0.255, p2=0.232
--- Iter [535/2000] ---
Total Loss: 2914.0354
MSE Component: 2.8900 (Weighted: 2890.0375)
NLL Component: 23.9099
Min Variance: 6.95e-06
p1=0.255, p2=0.232
--- Iter [536/2000] ---
Total Loss: 5371.6626
MSE Component: 5.3507 (Weighted: 5350.7485)
NLL Component: 20.8261
Min Variance: 9.40e-06
p1=0.255, p2=0.232
--- Iter [537/2000] ---
Total Loss: 3078.3608
MSE Component: 3.0536 (Weighted: 3053.5514)
NLL Component: 24.7214
Min Variance: 2.37e-06
p1=0.255, p2=0.232
--- Iter [538/2000] ---
Total Loss: 4612.8789
MSE Component: 4.5983 (Weighted: 4598.3276)
NLL Component: 14.4633
Min Variance: 1.23e-05
p1=0.255, p2=0.232
--- Iter [539/2000] ---
Total Loss: 7158.6982
MSE Component: 7.1412 (Weighted: 7141.2139)
NLL Component: 17.3965
Min Variance: 1.38e-05
p1=0.255, p2=0.232
--- Iter [540/2000] ---
Total Loss: 3353.7161
MSE Component: 3.3379 (Weighted: 3337.8701)
NLL Component: 15.7579
Min Variance: 8.24e-06
p1=0.255, p2=0.232

--- Validation at iteration 540 ---
Average MSE: 319.6253, Average ANEES: 476.2382
-----
--- Iter [541/2000] ---
Total Loss: 3462.3076
MSE Component: 3.4364 (Weighted: 3436.4467)
NLL Component: 25.7730

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Min Variance: 7.64e-06
p1=0.255, p2=0.232
--- Iter [542/2000] ---
Total Loss: 3540.8613
MSE Component: 3.5220 (Weighted: 3521.9553)
NLL Component: 18.8181
Min Variance: 1.04e-05
p1=0.255, p2=0.232
--- Iter [543/2000] ---
Total Loss: 3567.9224
MSE Component: 3.5426 (Weighted: 3542.5751)
NLL Component: 25.2592
Min Variance: 1.45e-05
p1=0.255, p2=0.232
--- Iter [544/2000] ---
Total Loss: 3580.3398
MSE Component: 3.5562 (Weighted: 3556.2158)
NLL Component: 24.0362
Min Variance: 5.73e-06
p1=0.255, p2=0.232
--- Iter [545/2000] ---
Total Loss: 4906.2520
MSE Component: 4.8829 (Weighted: 4882.8998)
NLL Component: 23.2641
Min Variance: 6.89e-06
p1=0.255, p2=0.232
--- Iter [546/2000] ---
Total Loss: 2393.0898
MSE Component: 2.3675 (Weighted: 2367.4541)
NLL Component: 25.5479
Min Variance: 6.16e-06
p1=0.255, p2=0.232
--- Iter [547/2000] ---
Total Loss: 4048.6311
MSE Component: 4.0203 (Weighted: 4020.2928)
NLL Component: 28.2506
Min Variance: 1.07e-05
p1=0.254, p2=0.232
--- Iter [548/2000] ---
Total Loss: 3264.9858
MSE Component: 3.2365 (Weighted: 3236.4700)
NLL Component: 28.4279
Min Variance: 3.71e-06
p1=0.254, p2=0.232
--- Iter [549/2000] ---
Total Loss: 3163.9700
MSE Component: 3.1418 (Weighted: 3141.7973)
NLL Component: 22.0848

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    Min Variance: 1.08e-05
    p1=0.254, p2=0.232
--- Iter [550/2000] ---
    Total Loss: 3524.9922
    MSE Component: 3.5049 (Weighted: 3504.9362)
    NLL Component: 19.9680
    Min Variance: 3.53e-06
    p1=0.254, p2=0.232

--- Validation at iteration 550 ---
    Average MSE: 324.0895, Average ANEES: 384.0953
-----
--- Iter [551/2000] ---
    Total Loss: 2975.3967
    MSE Component: 2.9536 (Weighted: 2953.5780)
    NLL Component: 21.7310
    Min Variance: 1.23e-05
    p1=0.254, p2=0.232
--- Iter [552/2000] ---
    Total Loss: 2765.9285
    MSE Component: 2.7471 (Weighted: 2747.1032)
    NLL Component: 18.7372
    Min Variance: 1.32e-05
    p1=0.254, p2=0.232
--- Iter [553/2000] ---
    Total Loss: 6478.3535
    MSE Component: 6.4535 (Weighted: 6453.5389)
    NLL Component: 24.7267
    Min Variance: 6.77e-06
    p1=0.254, p2=0.232
--- Iter [554/2000] ---
    Total Loss: 4404.0610
    MSE Component: 4.3853 (Weighted: 4385.2539)
    NLL Component: 18.7191
    Min Variance: 9.35e-06
    p1=0.254, p2=0.232
--- Iter [555/2000] ---
    Total Loss: 3839.6438
    MSE Component: 3.8225 (Weighted: 3822.4523)
    NLL Component: 17.1035
    Min Variance: 9.31e-06
    p1=0.254, p2=0.232
--- Iter [556/2000] ---
    Total Loss: 3887.1445
    MSE Component: 3.8734 (Weighted: 3873.3506)
    NLL Component: 13.7061
    Min Variance: 3.46e-06
    p1=0.254, p2=0.232

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--- Iter [557/2000] ---
Total Loss: 3698.2434
MSE Component: 3.6819 (Weighted: 3681.9379)
NLL Component: 16.2174
Min Variance: 1.57e-05
p1=0.254, p2=0.232
--- Iter [558/2000] ---
Total Loss: 3052.7427
MSE Component: 3.0309 (Weighted: 3030.9341)
NLL Component: 21.7208
Min Variance: 2.10e-05
p1=0.254, p2=0.232
--- Iter [559/2000] ---
Total Loss: 2863.7529
MSE Component: 2.8453 (Weighted: 2845.3002)
NLL Component: 18.3648
Min Variance: 1.05e-05
p1=0.254, p2=0.232
--- Iter [560/2000] ---
Total Loss: 3639.1855
MSE Component: 3.6133 (Weighted: 3613.3373)
NLL Component: 25.7606
Min Variance: 8.82e-06
p1=0.254, p2=0.232

--- Validation at iteration 560 ---
Average MSE: 287.7068, Average ANEES: 563.4045
-----
--- Iter [561/2000] ---
Total Loss: 3113.4336
MSE Component: 3.0869 (Weighted: 3086.9215)
NLL Component: 26.4243
Min Variance: 8.25e-06
p1=0.254, p2=0.232
--- Iter [562/2000] ---
Total Loss: 5063.3643
MSE Component: 5.0396 (Weighted: 5039.5627)
NLL Component: 23.7141
Min Variance: 6.49e-06
p1=0.254, p2=0.232
--- Iter [563/2000] ---
Total Loss: 4431.7466
MSE Component: 4.4011 (Weighted: 4401.0720)
NLL Component: 30.5866
Min Variance: 9.10e-06
p1=0.254, p2=0.232
--- Iter [564/2000] ---
Total Loss: 3583.6641

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MSE Component: 3.5609 (Weighted: 3560.9031)
NLL Component: 22.6731
Min Variance: 1.33e-05
p1=0.254, p2=0.232
--- Iter [565/2000] ---
Total Loss: 3973.2590
MSE Component: 3.9476 (Weighted: 3947.6097)
NLL Component: 25.5615
Min Variance: 1.15e-06
p1=0.254, p2=0.232
--- Iter [566/2000] ---
Total Loss: 3989.4294
MSE Component: 3.9718 (Weighted: 3971.7937)
NLL Component: 17.5479
Min Variance: 6.40e-06
p1=0.254, p2=0.232
--- Iter [567/2000] ---
Total Loss: 2567.8972
MSE Component: 2.5412 (Weighted: 2541.2369)
NLL Component: 26.5724
Min Variance: 3.27e-06
p1=0.254, p2=0.232
--- Iter [568/2000] ---
Total Loss: 3802.9248
MSE Component: 3.7857 (Weighted: 3785.7347)
NLL Component: 17.1022
Min Variance: 9.39e-06
p1=0.254, p2=0.232
--- Iter [569/2000] ---
Total Loss: 4860.8525
MSE Component: 4.8425 (Weighted: 4842.5179)
NLL Component: 18.2464
Min Variance: 2.03e-05
p1=0.254, p2=0.232
--- Iter [570/2000] ---
Total Loss: 3271.1675
MSE Component: 3.2410 (Weighted: 3240.9618)
NLL Component: 30.1180
Min Variance: 4.71e-06
p1=0.254, p2=0.232

--- Validation at iteration 570 ---
Average MSE: 302.7095, Average ANEES: 422.7819
-----
--- Iter [571/2000] ---
Total Loss: 3475.2092
MSE Component: 3.4577 (Weighted: 3457.7293)
NLL Component: 17.3922

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Min Variance: 5.36e-06
p1=0.254, p2=0.232
--- Iter [572/2000] ---
Total Loss: 4150.8892
MSE Component: 4.1261 (Weighted: 4126.1177)
NLL Component: 24.6836
Min Variance: 1.05e-05
p1=0.254, p2=0.232
--- Iter [573/2000] ---
Total Loss: 4294.1587
MSE Component: 4.2768 (Weighted: 4276.7982)
NLL Component: 17.2726
Min Variance: 8.20e-06
p1=0.254, p2=0.232
--- Iter [574/2000] ---
Total Loss: 3679.5940
MSE Component: 3.6526 (Weighted: 3652.6308)
NLL Component: 26.8753
Min Variance: 9.50e-07
p1=0.254, p2=0.232
--- Iter [575/2000] ---
Total Loss: 4265.9712
MSE Component: 4.2534 (Weighted: 4253.3841)
NLL Component: 12.4991
Min Variance: 1.24e-05
p1=0.254, p2=0.232
--- Iter [576/2000] ---
Total Loss: 3576.9919
MSE Component: 3.5580 (Weighted: 3557.9748)
NLL Component: 18.9291
Min Variance: 1.38e-05
p1=0.254, p2=0.232
--- Iter [577/2000] ---
Total Loss: 4384.9385
MSE Component: 4.3678 (Weighted: 4367.7897)
NLL Component: 17.0612
Min Variance: 1.01e-05
p1=0.254, p2=0.232
--- Iter [578/2000] ---
Total Loss: 3563.0144
MSE Component: 3.5421 (Weighted: 3542.0780)
NLL Component: 20.8484
Min Variance: 8.33e-06
p1=0.254, p2=0.232
--- Iter [579/2000] ---
Total Loss: 3793.9656
MSE Component: 3.7638 (Weighted: 3763.7527)
NLL Component: 30.1251

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    Min Variance: 8.66e-06
    p1=0.254, p2=0.232
--- Iter [580/2000] ---
    Total Loss: 4486.4990
    MSE Component: 4.4614 (Weighted: 4461.3638)
    NLL Component: 25.0473
    Min Variance: 3.02e-06
    p1=0.254, p2=0.232

--- Validation at iteration 580 ---
    Average MSE: 318.3834, Average ANEES: 476.2231
-----
--- Iter [581/2000] ---
    Total Loss: 3449.8401
    MSE Component: 3.4258 (Weighted: 3425.8249)
    NLL Component: 23.9272
    Min Variance: 1.95e-05
    p1=0.254, p2=0.232
--- Iter [582/2000] ---
    Total Loss: 2444.2231
    MSE Component: 2.4267 (Weighted: 2426.6529)
    NLL Component: 17.4825
    Min Variance: 2.45e-06
    p1=0.254, p2=0.232
--- Iter [583/2000] ---
    Total Loss: 3396.8018
    MSE Component: 3.3732 (Weighted: 3373.1639)
    NLL Component: 23.5501
    Min Variance: 8.97e-06
    p1=0.254, p2=0.232
--- Iter [584/2000] ---
    Total Loss: 2759.0037
    MSE Component: 2.7392 (Weighted: 2739.2273)
    NLL Component: 19.6885
    Min Variance: 6.92e-06
    p1=0.254, p2=0.232
--- Iter [585/2000] ---
    Total Loss: 4023.9365
    MSE Component: 4.0038 (Weighted: 4003.8123)
    NLL Component: 20.0363
    Min Variance: 9.74e-06
    p1=0.254, p2=0.232
--- Iter [586/2000] ---
    Total Loss: 3039.5107
    MSE Component: 3.0224 (Weighted: 3022.3584)
    NLL Component: 17.0646
    Min Variance: 6.29e-06
    p1=0.254, p2=0.232

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--- Iter [587/2000] ---
Total Loss: 3720.2795
MSE Component: 3.7007 (Weighted: 3700.7465)
NLL Component: 19.4452
Min Variance: 4.38e-06
p1=0.254, p2=0.232
--- Iter [588/2000] ---
Total Loss: 3379.4453
MSE Component: 3.3636 (Weighted: 3363.6436)
NLL Component: 15.7140
Min Variance: 5.77e-06
p1=0.254, p2=0.232
--- Iter [589/2000] ---
Total Loss: 3708.2559
MSE Component: 3.6853 (Weighted: 3685.2858)
NLL Component: 22.8820
Min Variance: 8.39e-06
p1=0.254, p2=0.232
--- Iter [590/2000] ---
Total Loss: 3281.2571
MSE Component: 3.2568 (Weighted: 3256.8202)
NLL Component: 24.3488
Min Variance: 4.77e-06
p1=0.254, p2=0.232

--- Validation at iteration 590 ---
Average MSE: 280.4211, Average ANEES: 467.8824
-----
--- Iter [591/2000] ---
Total Loss: 2588.0779
MSE Component: 2.5706 (Weighted: 2570.5652)
NLL Component: 17.4248
Min Variance: 2.97e-06
p1=0.254, p2=0.232
--- Iter [592/2000] ---
Total Loss: 2873.2288
MSE Component: 2.8514 (Weighted: 2851.4225)
NLL Component: 21.7182
Min Variance: 1.24e-05
p1=0.254, p2=0.232
--- Iter [593/2000] ---
Total Loss: 4497.1743
MSE Component: 4.4795 (Weighted: 4479.5351)
NLL Component: 17.5514
Min Variance: 1.51e-05
p1=0.254, p2=0.232
--- Iter [594/2000] ---
Total Loss: 2973.5981

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MSE Component: 2.9498 (Weighted: 2949.8489)
NLL Component: 23.6613
Min Variance: 5.70e-06
p1=0.254, p2=0.231
--- Iter [595/2000] ---
Total Loss: 3208.2146
MSE Component: 3.1847 (Weighted: 3184.7103)
NLL Component: 23.4164
Min Variance: 4.38e-06
p1=0.254, p2=0.231
--- Iter [596/2000] ---
Total Loss: 3100.7805
MSE Component: 3.0807 (Weighted: 3080.6522)
NLL Component: 20.0404
Min Variance: 9.90e-06
p1=0.254, p2=0.231
--- Iter [597/2000] ---
Total Loss: 3140.6208
MSE Component: 3.1228 (Weighted: 3122.7782)
NLL Component: 17.7549
Min Variance: 4.36e-06
p1=0.254, p2=0.231
--- Iter [598/2000] ---
Total Loss: 4010.4009
MSE Component: 3.9791 (Weighted: 3979.0823)
NLL Component: 31.2306
Min Variance: 8.60e-06
p1=0.254, p2=0.231
--- Iter [599/2000] ---
Total Loss: 3047.4238
MSE Component: 3.0230 (Weighted: 3022.9554)
NLL Component: 24.3805
Min Variance: 1.24e-05
p1=0.254, p2=0.231
--- Iter [600/2000] ---
Total Loss: 2801.9253
MSE Component: 2.7725 (Weighted: 2772.4638)
NLL Component: 29.3735
Min Variance: 1.09e-05
p1=0.254, p2=0.231

--- Validation at iteration 600 ---
Average MSE: 323.6193, Average ANEES: 491.3443
-----
--- Iter [601/2000] ---
Total Loss: 2657.5144
MSE Component: 2.6358 (Weighted: 2635.8156)
NLL Component: 21.6108

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Min Variance: 1.71e-05
p1=0.254, p2=0.231
--- Iter [602/2000] ---
Total Loss: 4081.8264
MSE Component: 4.0562 (Weighted: 4056.1938)
NLL Component: 25.5448
Min Variance: 4.91e-06
p1=0.254, p2=0.231
--- Iter [603/2000] ---
Total Loss: 3030.6775
MSE Component: 3.0130 (Weighted: 3013.0336)
NLL Component: 17.5558
Min Variance: 9.35e-06
p1=0.254, p2=0.231
--- Iter [604/2000] ---
Total Loss: 3339.5991
MSE Component: 3.3137 (Weighted: 3313.7045)
NLL Component: 25.8068
Min Variance: 6.12e-06
p1=0.254, p2=0.231
--- Iter [605/2000] ---
Total Loss: 3463.6313
MSE Component: 3.4414 (Weighted: 3441.3800)
NLL Component: 22.1632
Min Variance: 7.07e-06
p1=0.254, p2=0.231
--- Iter [606/2000] ---
Total Loss: 1880.5853
MSE Component: 1.8623 (Weighted: 1862.2879)
NLL Component: 18.2097
Min Variance: 3.74e-06
p1=0.254, p2=0.231
--- Iter [607/2000] ---
Total Loss: 3597.8997
MSE Component: 3.5709 (Weighted: 3570.9445)
NLL Component: 26.8671
Min Variance: 1.24e-05
p1=0.254, p2=0.231
--- Iter [608/2000] ---
Total Loss: 2790.8677
MSE Component: 2.7718 (Weighted: 2771.8499)
NLL Component: 18.9298
Min Variance: 1.32e-05
p1=0.254, p2=0.231
--- Iter [609/2000] ---
Total Loss: 3141.5037
MSE Component: 3.1164 (Weighted: 3116.4398)
NLL Component: 24.9759

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    Min Variance: 5.85e-06
    p1=0.254, p2=0.231
--- Iter [610/2000] ---
    Total Loss: 3401.4846
    MSE Component: 3.3818 (Weighted: 3381.8290)
    NLL Component: 19.5677
    Min Variance: 5.05e-06
    p1=0.254, p2=0.231

--- Validation at iteration 610 ---
    Average MSE: 322.1079, Average ANEES: 425.8963
-----
--- Iter [611/2000] ---
    Total Loss: 3702.0947
    MSE Component: 3.6838 (Weighted: 3683.7597)
    NLL Component: 18.2472
    Min Variance: 5.33e-06
    p1=0.254, p2=0.231
--- Iter [612/2000] ---
    Total Loss: 3359.2671
    MSE Component: 3.3317 (Weighted: 3331.7049)
    NLL Component: 27.4743
    Min Variance: 7.06e-06
    p1=0.254, p2=0.231
--- Iter [613/2000] ---
    Total Loss: 4273.0796
    MSE Component: 4.2541 (Weighted: 4254.1099)
    NLL Component: 18.8819
    Min Variance: 8.57e-06
    p1=0.254, p2=0.231
--- Iter [614/2000] ---
    Total Loss: 3079.2476
    MSE Component: 3.0519 (Weighted: 3051.8529)
    NLL Component: 27.3066
    Min Variance: 9.34e-06
    p1=0.254, p2=0.231
--- Iter [615/2000] ---
    Total Loss: 2748.4458
    MSE Component: 2.7237 (Weighted: 2723.7074)
    NLL Component: 24.6505
    Min Variance: 1.23e-05
    p1=0.254, p2=0.231
--- Iter [616/2000] ---
    Total Loss: 2581.6384
    MSE Component: 2.5617 (Weighted: 2561.6567)
    NLL Component: 19.8938
    Min Variance: 5.20e-06
    p1=0.254, p2=0.231

```

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--- Iter [617/2000] ---
Total Loss: 3481.0103
MSE Component: 3.4644 (Weighted: 3464.4151)
NLL Component: 16.5073
Min Variance: 7.65e-06
p1=0.254, p2=0.231
--- Iter [618/2000] ---
Total Loss: 3772.9014
MSE Component: 3.7492 (Weighted: 3749.2354)
NLL Component: 23.5780
Min Variance: 9.23e-06
p1=0.254, p2=0.231
--- Iter [619/2000] ---
Total Loss: 2635.3760
MSE Component: 2.6165 (Weighted: 2616.4980)
NLL Component: 18.7899
Min Variance: 3.21e-06
p1=0.254, p2=0.231
--- Iter [620/2000] ---
Total Loss: 3057.5261
MSE Component: 3.0453 (Weighted: 3045.2669)
NLL Component: 12.1715
Min Variance: 8.08e-06
p1=0.254, p2=0.231

--- Validation at iteration 620 ---
Average MSE: 302.6372, Average ANEES: 454.1036
-----
--- Iter [621/2000] ---
Total Loss: 2920.1965
MSE Component: 2.9035 (Weighted: 2903.4934)
NLL Component: 16.6153
Min Variance: 4.16e-06
p1=0.254, p2=0.231
--- Iter [622/2000] ---
Total Loss: 3913.2061
MSE Component: 3.8873 (Weighted: 3887.3212)
NLL Component: 25.7970
Min Variance: 1.09e-05
p1=0.254, p2=0.231
--- Iter [623/2000] ---
Total Loss: 3311.5786
MSE Component: 3.2898 (Weighted: 3289.8116)
NLL Component: 21.6792
Min Variance: 2.79e-06
p1=0.254, p2=0.231
--- Iter [624/2000] ---
Total Loss: 3596.4319

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```

MSE Component: 3.5758 (Weighted: 3575.8324)
NLL Component: 20.5117
Min Variance: 1.56e-05
p1=0.254, p2=0.231
--- Iter [625/2000] ---
Total Loss: 2757.5437
MSE Component: 2.7317 (Weighted: 2731.6725)
NLL Component: 25.7832
Min Variance: 6.45e-06
p1=0.254, p2=0.231
--- Iter [626/2000] ---
Total Loss: 2610.6697
MSE Component: 2.5905 (Weighted: 2590.4639)
NLL Component: 20.1178
Min Variance: 1.18e-05
p1=0.254, p2=0.231
--- Iter [627/2000] ---
Total Loss: 2847.0229
MSE Component: 2.8249 (Weighted: 2824.8508)
NLL Component: 22.0843
Min Variance: 8.34e-06
p1=0.254, p2=0.231
--- Iter [628/2000] ---
Total Loss: 3059.4189
MSE Component: 3.0405 (Weighted: 3040.5478)
NLL Component: 18.7833
Min Variance: 3.44e-06
p1=0.254, p2=0.231
--- Iter [629/2000] ---
Total Loss: 2893.6272
MSE Component: 2.8663 (Weighted: 2866.2722)
NLL Component: 27.2671
Min Variance: 1.21e-05
p1=0.254, p2=0.231
--- Iter [630/2000] ---
Total Loss: 2644.7559
MSE Component: 2.6316 (Weighted: 2631.5672)
NLL Component: 13.1009
Min Variance: 8.58e-06
p1=0.254, p2=0.231

--- Validation at iteration 630 ---
Average MSE: 339.3404, Average ANEES: 439.9920
-----
--- Iter [631/2000] ---
Total Loss: 2906.4854
MSE Component: 2.8846 (Weighted: 2884.6457)
NLL Component: 21.7518

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```

Min Variance: 8.95e-06
p1=0.254, p2=0.231
--- Iter [632/2000] ---
Total Loss: 4026.5081
MSE Component: 4.0061 (Weighted: 4006.0868)
NLL Component: 20.3333
Min Variance: 9.10e-06
p1=0.254, p2=0.231
--- Iter [633/2000] ---
Total Loss: 4060.2646
MSE Component: 4.0393 (Weighted: 4039.2609)
NLL Component: 20.9160
Min Variance: 5.88e-06
p1=0.254, p2=0.231
--- Iter [634/2000] ---
Total Loss: 2412.1318
MSE Component: 2.3924 (Weighted: 2392.4398)
NLL Component: 19.6040
Min Variance: 8.68e-06
p1=0.254, p2=0.231
--- Iter [635/2000] ---
Total Loss: 2803.8799
MSE Component: 2.7896 (Weighted: 2789.6435)
NLL Component: 14.1484
Min Variance: 5.03e-06
p1=0.254, p2=0.231
--- Iter [636/2000] ---
Total Loss: 3044.6052
MSE Component: 3.0263 (Weighted: 3026.2814)
NLL Component: 18.2361
Min Variance: 3.51e-06
p1=0.254, p2=0.231
--- Iter [637/2000] ---
Total Loss: 3350.2988
MSE Component: 3.3299 (Weighted: 3329.9367)
NLL Component: 20.2743
Min Variance: 5.18e-06
p1=0.254, p2=0.231
--- Iter [638/2000] ---
Total Loss: 3045.5291
MSE Component: 3.0237 (Weighted: 3023.7145)
NLL Component: 21.7264
Min Variance: 1.34e-05
p1=0.254, p2=0.231
--- Iter [639/2000] ---
Total Loss: 2507.7188
MSE Component: 2.4884 (Weighted: 2488.3518)
NLL Component: 19.2791

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    Min Variance: 1.21e-05
    p1=0.254, p2=0.231
--- Iter [640/2000] ---
    Total Loss: 2457.1765
    MSE Component: 2.4411 (Weighted: 2441.0598)
    NLL Component: 16.0288
    Min Variance: 7.32e-06
    p1=0.254, p2=0.231

--- Validation at iteration 640 ---
    Average MSE: 331.9782, Average ANEES: 356.9369
-----
--- Iter [641/2000] ---
    Total Loss: 2946.2942
    MSE Component: 2.9263 (Weighted: 2926.2674)
    NLL Component: 19.9390
    Min Variance: 8.33e-06
    p1=0.254, p2=0.231
--- Iter [642/2000] ---
    Total Loss: 2858.4080
    MSE Component: 2.8372 (Weighted: 2837.1708)
    NLL Component: 21.1492
    Min Variance: 6.49e-06
    p1=0.254, p2=0.231
--- Iter [643/2000] ---
    Total Loss: 2812.1680
    MSE Component: 2.7970 (Weighted: 2797.0290)
    NLL Component: 15.0509
    Min Variance: 1.44e-05
    p1=0.254, p2=0.231
--- Iter [644/2000] ---
    Total Loss: 3082.5310
    MSE Component: 3.0599 (Weighted: 3059.8643)
    NLL Component: 22.5788
    Min Variance: 5.89e-06
    p1=0.254, p2=0.231
--- Iter [645/2000] ---
    Total Loss: 2308.1750
    MSE Component: 2.2843 (Weighted: 2284.2696)
    NLL Component: 23.8175
    Min Variance: 1.52e-05
    p1=0.254, p2=0.231
--- Iter [646/2000] ---
    Total Loss: 2284.6440
    MSE Component: 2.2668 (Weighted: 2266.7778)
    NLL Component: 17.7784
    Min Variance: 4.99e-06
    p1=0.254, p2=0.231

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--- Iter [647/2000] ---
Total Loss: 2784.2300
MSE Component: 2.7580 (Weighted: 2758.0383)
NLL Component: 26.1038
Min Variance: 2.94e-06
p1=0.254, p2=0.231
--- Iter [648/2000] ---
Total Loss: 2140.5012
MSE Component: 2.1209 (Weighted: 2120.9111)
NLL Component: 19.5022
Min Variance: 3.49e-06
p1=0.254, p2=0.231
--- Iter [649/2000] ---
Total Loss: 2907.1169
MSE Component: 2.8867 (Weighted: 2886.6806)
NLL Component: 20.3483
Min Variance: 7.49e-06
p1=0.254, p2=0.231
--- Iter [650/2000] ---
Total Loss: 2715.7998
MSE Component: 2.6938 (Weighted: 2693.8274)
NLL Component: 21.8846
Min Variance: 3.76e-06
p1=0.254, p2=0.231

--- Validation at iteration 650 ---
Average MSE: 280.0148, Average ANEES: 497.0662
-----
--- Iter [651/2000] ---
Total Loss: 2295.9277
MSE Component: 2.2720 (Weighted: 2272.0094)
NLL Component: 23.8307
Min Variance: 4.53e-06
p1=0.254, p2=0.231
--- Iter [652/2000] ---
Total Loss: 2732.0605
MSE Component: 2.7112 (Weighted: 2711.1604)
NLL Component: 20.8123
Min Variance: 2.79e-06
p1=0.254, p2=0.231
--- Iter [653/2000] ---
Total Loss: 3076.1274
MSE Component: 3.0556 (Weighted: 3055.5613)
NLL Component: 20.4782
Min Variance: 9.16e-06
p1=0.254, p2=0.231
--- Iter [654/2000] ---
Total Loss: 3363.7866

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MSE Component: 3.3354 (Weighted: 3335.4177)
NLL Component: 28.2810
Min Variance: 6.34e-06
p1=0.254, p2=0.231
--- Iter [655/2000] ---
Total Loss: 2882.9631
MSE Component: 2.8627 (Weighted: 2862.6921)
NLL Component: 20.1832
Min Variance: 6.94e-06
p1=0.254, p2=0.231
--- Iter [656/2000] ---
Total Loss: 3184.1514
MSE Component: 3.1644 (Weighted: 3164.3565)
NLL Component: 19.7070
Min Variance: 4.96e-06
p1=0.254, p2=0.231
--- Iter [657/2000] ---
Total Loss: 2702.0510
MSE Component: 2.6791 (Weighted: 2679.0705)
NLL Component: 22.8925
Min Variance: 4.27e-06
p1=0.254, p2=0.231
--- Iter [658/2000] ---
Total Loss: 2362.5583
MSE Component: 2.3450 (Weighted: 2344.9767)
NLL Component: 17.4938
Min Variance: 9.53e-06
p1=0.254, p2=0.231
--- Iter [659/2000] ---
Total Loss: 2502.3240
MSE Component: 2.4886 (Weighted: 2488.6453)
NLL Component: 13.5909
Min Variance: 9.58e-06
p1=0.254, p2=0.231
--- Iter [660/2000] ---
Total Loss: 2903.8640
MSE Component: 2.8750 (Weighted: 2875.0386)
NLL Component: 28.7376
Min Variance: 1.40e-05
p1=0.254, p2=0.231

--- Validation at iteration 660 ---
Average MSE: 303.7154, Average ANEES: 438.8087
-----
--- Iter [661/2000] ---
Total Loss: 2987.2146
MSE Component: 2.9639 (Weighted: 2963.8584)
NLL Component: 23.2684

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Min Variance: 7.89e-06
p1=0.254, p2=0.231
--- Iter [662/2000] ---
Total Loss: 2312.8354
MSE Component: 2.2995 (Weighted: 2299.5129)
NLL Component: 13.2345
Min Variance: 1.01e-05
p1=0.254, p2=0.231
--- Iter [663/2000] ---
Total Loss: 2550.0896
MSE Component: 2.5320 (Weighted: 2532.0334)
NLL Component: 17.9683
Min Variance: 5.70e-06
p1=0.254, p2=0.231
--- Iter [664/2000] ---
Total Loss: 2301.2437
MSE Component: 2.2863 (Weighted: 2286.3495)
NLL Component: 14.8061
Min Variance: 4.93e-06
p1=0.254, p2=0.231
--- Iter [665/2000] ---
Total Loss: 1966.2091
MSE Component: 1.9461 (Weighted: 1946.1358)
NLL Component: 19.9855
Min Variance: 5.35e-06
p1=0.254, p2=0.231
--- Iter [666/2000] ---
Total Loss: 2719.7932
MSE Component: 2.6887 (Weighted: 2688.6897)
NLL Component: 31.0156
Min Variance: 5.42e-06
p1=0.254, p2=0.231
--- Iter [667/2000] ---
Total Loss: 2269.7295
MSE Component: 2.2501 (Weighted: 2250.0744)
NLL Component: 19.5671
Min Variance: 3.17e-06
p1=0.254, p2=0.231
--- Iter [668/2000] ---
Total Loss: 2098.3945
MSE Component: 2.0825 (Weighted: 2082.4993)
NLL Component: 15.8073
Min Variance: 5.94e-06
p1=0.254, p2=0.231
--- Iter [669/2000] ---
Total Loss: 2257.5071
MSE Component: 2.2377 (Weighted: 2237.7374)
NLL Component: 19.6819

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    Min Variance: 1.66e-05
    p1=0.254, p2=0.231
--- Iter [670/2000] ---
    Total Loss: 3081.6108
    MSE Component: 3.0559 (Weighted: 3055.9452)
    NLL Component: 25.5778
    Min Variance: 5.84e-06
    p1=0.254, p2=0.231

--- Validation at iteration 670 ---
    Average MSE: 285.7382, Average ANEES: 449.9306
-----
--- Iter [671/2000] ---
    Total Loss: 2580.0718
    MSE Component: 2.5576 (Weighted: 2557.5981)
    NLL Component: 22.3857
    Min Variance: 1.20e-05
    p1=0.254, p2=0.231
--- Iter [672/2000] ---
    Total Loss: 2639.6348
    MSE Component: 2.6226 (Weighted: 2622.5677)
    NLL Component: 16.9793
    Min Variance: 9.77e-06
    p1=0.253, p2=0.231
--- Iter [673/2000] ---
    Total Loss: 2164.0071
    MSE Component: 2.1419 (Weighted: 2141.8555)
    NLL Component: 22.0637
    Min Variance: 9.29e-06
    p1=0.253, p2=0.231
--- Iter [674/2000] ---
    Total Loss: 2360.7004
    MSE Component: 2.3366 (Weighted: 2336.6036)
    NLL Component: 24.0087
    Min Variance: 2.97e-06
    p1=0.253, p2=0.231
--- Iter [675/2000] ---
    Total Loss: 2002.1326
    MSE Component: 1.9922 (Weighted: 1992.2463)
    NLL Component: 9.7985
    Min Variance: 4.18e-06
    p1=0.253, p2=0.231
--- Iter [676/2000] ---
    Total Loss: 2769.6807
    MSE Component: 2.7498 (Weighted: 2749.7694)
    NLL Component: 19.8233
    Min Variance: 1.28e-05
    p1=0.253, p2=0.231

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--- Iter [677/2000] ---
Total Loss: 2945.7998
MSE Component: 2.9314 (Weighted: 2931.3607)
NLL Component: 14.3510
Min Variance: 8.64e-06
p1=0.253, p2=0.231
--- Iter [678/2000] ---
Total Loss: 2774.5708
MSE Component: 2.7585 (Weighted: 2758.5108)
NLL Component: 15.9722
Min Variance: 7.91e-06
p1=0.253, p2=0.231
--- Iter [679/2000] ---
Total Loss: 3184.7952
MSE Component: 3.1641 (Weighted: 3164.1247)
NLL Component: 20.5825
Min Variance: 5.82e-06
p1=0.253, p2=0.231
--- Iter [680/2000] ---
Total Loss: 2221.0552
MSE Component: 2.2072 (Weighted: 2207.2194)
NLL Component: 13.7479
Min Variance: 1.36e-05
p1=0.253, p2=0.231

--- Validation at iteration 680 ---
Average MSE: 331.7854, Average ANEES: 349.9341
-----
--- Iter [681/2000] ---
Total Loss: 3704.3552
MSE Component: 3.6908 (Weighted: 3690.7697)
NLL Component: 13.4976
Min Variance: 1.14e-05
p1=0.253, p2=0.231
--- Iter [682/2000] ---
Total Loss: 7693.5586
MSE Component: 7.6772 (Weighted: 7677.1588)
NLL Component: 16.3118
Min Variance: 8.32e-06
p1=0.253, p2=0.231
--- Iter [683/2000] ---
Total Loss: 4725.9321
MSE Component: 4.7090 (Weighted: 4709.0421)
NLL Component: 16.8021
Min Variance: 1.00e-05
p1=0.253, p2=0.231
--- Iter [684/2000] ---
Total Loss: 5384.6670

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MSE Component: 5.3636 (Weighted: 5363.5855)
NLL Component: 20.9938
Min Variance: 4.91e-06
p1=0.253, p2=0.231
--- Iter [685/2000] ---
Total Loss: 5938.6758
MSE Component: 5.9189 (Weighted: 5918.8666)
NLL Component: 19.7213
Min Variance: 1.10e-05
p1=0.253, p2=0.231
--- Iter [686/2000] ---
Total Loss: 4126.1860
MSE Component: 4.1075 (Weighted: 4107.5182)
NLL Component: 18.5803
Min Variance: 9.95e-06
p1=0.253, p2=0.231
--- Iter [687/2000] ---
Total Loss: 3251.5786
MSE Component: 3.2355 (Weighted: 3235.5452)
NLL Component: 15.9455
Min Variance: 3.55e-06
p1=0.253, p2=0.231
--- Iter [688/2000] ---
Total Loss: 2459.7620
MSE Component: 2.4434 (Weighted: 2443.3513)
NLL Component: 16.3229
Min Variance: 1.15e-05
p1=0.253, p2=0.231
--- Iter [689/2000] ---
Total Loss: 2984.6069
MSE Component: 2.9635 (Weighted: 2963.4767)
NLL Component: 21.0424
Min Variance: 1.24e-05
p1=0.253, p2=0.231
--- Iter [690/2000] ---
Total Loss: 7638.9365
MSE Component: 7.6183 (Weighted: 7618.2928)
NLL Component: 20.5555
Min Variance: 6.28e-06
p1=0.253, p2=0.231

--- Validation at iteration 690 ---
Average MSE: 262.4835, Average ANEES: 625.1915
-----
--- Iter [691/2000] ---
Total Loss: 7064.8628
MSE Component: 7.0450 (Weighted: 7045.0091)
NLL Component: 19.7655

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Min Variance: 1.16e-05
p1=0.253, p2=0.231
--- Iter [692/2000] ---
Total Loss: 7414.6401
MSE Component: 7.3942 (Weighted: 7394.2018)
NLL Component: 20.3503
Min Variance: 9.01e-06
p1=0.253, p2=0.231
--- Iter [693/2000] ---
Total Loss: 4627.1045
MSE Component: 4.6059 (Weighted: 4605.8736)
NLL Component: 21.1428
Min Variance: 1.14e-05
p1=0.253, p2=0.231
--- Iter [694/2000] ---
Total Loss: 2896.2432
MSE Component: 2.8766 (Weighted: 2876.6189)
NLL Component: 19.5363
Min Variance: 1.69e-05
p1=0.253, p2=0.231
--- Iter [695/2000] ---
Total Loss: 2959.4070
MSE Component: 2.9356 (Weighted: 2935.6008)
NLL Component: 23.7184
Min Variance: 6.57e-06
p1=0.253, p2=0.231
--- Iter [696/2000] ---
Total Loss: 3682.2634
MSE Component: 3.6664 (Weighted: 3666.3721)
NLL Component: 15.8035
Min Variance: 8.84e-06
p1=0.253, p2=0.231
--- Iter [697/2000] ---
Total Loss: 4479.1084
MSE Component: 4.4615 (Weighted: 4461.5173)
NLL Component: 17.5031
Min Variance: 9.23e-06
p1=0.253, p2=0.231
--- Iter [698/2000] ---
Total Loss: 2584.1338
MSE Component: 2.5669 (Weighted: 2566.8972)
NLL Component: 17.1487
Min Variance: 1.10e-05
p1=0.253, p2=0.231
--- Iter [699/2000] ---
Total Loss: 6277.5205
MSE Component: 6.2518 (Weighted: 6251.8072)
NLL Component: 25.6254

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    Min Variance: 1.48e-05
    p1=0.253, p2=0.231
--- Iter [700/2000] ---
    Total Loss: 3435.6292
    MSE Component: 3.4198 (Weighted: 3419.8315)
    NLL Component: 15.7097
    Min Variance: 1.24e-05
    p1=0.253, p2=0.231

--- Validation at iteration 700 ---
    Average MSE: 306.0872, Average ANEES: 553.4781
-----
--- Iter [701/2000] ---
    Total Loss: 2449.1208
    MSE Component: 2.4309 (Weighted: 2430.8946)
    NLL Component: 18.1385
    Min Variance: 1.05e-05
    p1=0.253, p2=0.231
--- Iter [702/2000] ---
    Total Loss: 2172.2837
    MSE Component: 2.1592 (Weighted: 2159.2107)
    NLL Component: 12.9850
    Min Variance: 6.74e-06
    p1=0.253, p2=0.231
--- Iter [703/2000] ---
    Total Loss: 4057.6111
    MSE Component: 4.0424 (Weighted: 4042.3603)
    NLL Component: 15.1628
    Min Variance: 6.99e-06
    p1=0.253, p2=0.231
--- Iter [704/2000] ---
    Total Loss: 3805.5361
    MSE Component: 3.7823 (Weighted: 3782.2738)
    NLL Component: 23.1745
    Min Variance: 7.19e-06
    p1=0.253, p2=0.231
--- Iter [705/2000] ---
    Total Loss: 2690.6184
    MSE Component: 2.6617 (Weighted: 2661.7353)
    NLL Component: 28.7952
    Min Variance: 7.04e-06
    p1=0.253, p2=0.231
--- Iter [706/2000] ---
    Total Loss: 2779.6279
    MSE Component: 2.7624 (Weighted: 2762.3951)
    NLL Component: 17.1449
    Min Variance: 1.02e-05
    p1=0.253, p2=0.231

```



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--- Iter [707/2000] ---
Total Loss: 2718.7109
MSE Component: 2.7048 (Weighted: 2704.8190)
NLL Component: 13.8043
Min Variance: 1.25e-05
p1=0.253, p2=0.231
--- Iter [708/2000] ---
Total Loss: 2617.7930
MSE Component: 2.5964 (Weighted: 2596.4224)
NLL Component: 21.2827
Min Variance: 2.26e-05
p1=0.253, p2=0.231
--- Iter [709/2000] ---
Total Loss: 3373.0535
MSE Component: 3.3558 (Weighted: 3355.7501)
NLL Component: 17.2157
Min Variance: 1.41e-05
p1=0.253, p2=0.231
--- Iter [710/2000] ---
Total Loss: 2663.2378
MSE Component: 2.6451 (Weighted: 2645.0882)
NLL Component: 18.0618
Min Variance: 6.16e-06
p1=0.253, p2=0.231

--- Validation at iteration 710 ---
Average MSE: 345.2188, Average ANEES: 442.5623
-----
--- Iter [711/2000] ---
Total Loss: 3421.3887
MSE Component: 3.4035 (Weighted: 3403.4507)
NLL Component: 17.8501
Min Variance: 4.99e-06
p1=0.253, p2=0.231
--- Iter [712/2000] ---
Total Loss: 2225.3669
MSE Component: 2.2073 (Weighted: 2207.2599)
NLL Component: 18.0190
Min Variance: 5.96e-06
p1=0.253, p2=0.231
--- Iter [713/2000] ---
Total Loss: 2352.7363
MSE Component: 2.3402 (Weighted: 2340.1797)
NLL Component: 12.4686
Min Variance: 1.63e-05
p1=0.253, p2=0.231
--- Iter [714/2000] ---
Total Loss: 2477.1921

```

```

MSE Component: 2.4601 (Weighted: 2460.0904)
NLL Component: 17.0140
Min Variance: 1.21e-05
p1=0.253, p2=0.231
--- Iter [715/2000] ---
Total Loss: 4348.5200
MSE Component: 4.3258 (Weighted: 4325.8419)
NLL Component: 22.5906
Min Variance: 4.17e-06
p1=0.253, p2=0.231
--- Iter [716/2000] ---
Total Loss: 3214.2068
MSE Component: 3.1942 (Weighted: 3194.2172)
NLL Component: 19.9016
Min Variance: 8.93e-06
p1=0.253, p2=0.231
--- Iter [717/2000] ---
Total Loss: 3085.9634
MSE Component: 3.0711 (Weighted: 3071.1460)
NLL Component: 14.7296
Min Variance: 7.55e-06
p1=0.253, p2=0.231
--- Iter [718/2000] ---
Total Loss: 2201.6323
MSE Component: 2.1867 (Weighted: 2186.6772)
NLL Component: 14.8673
Min Variance: 9.24e-06
p1=0.253, p2=0.231
--- Iter [719/2000] ---
Total Loss: 2565.5564
MSE Component: 2.5408 (Weighted: 2540.8101)
NLL Component: 24.6583
Min Variance: 8.28e-06
p1=0.253, p2=0.231
--- Iter [720/2000] ---
Total Loss: 2404.0791
MSE Component: 2.3943 (Weighted: 2394.3021)
NLL Component: 9.6888
Min Variance: 1.05e-05
p1=0.253, p2=0.231

--- Validation at iteration 720 ---
Average MSE: 337.4128, Average ANEES: 480.9968
-----
--- Iter [721/2000] ---
Total Loss: 2547.3486
MSE Component: 2.5295 (Weighted: 2529.4943)
NLL Component: 17.7663

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```

Min Variance: 1.29e-05
p1=0.253, p2=0.231
--- Iter [722/2000] ---
Total Loss: 3327.9180
MSE Component: 3.3145 (Weighted: 3314.5094)
NLL Component: 13.3209
Min Variance: 1.99e-05
p1=0.253, p2=0.231
--- Iter [723/2000] ---
Total Loss: 2551.5676
MSE Component: 2.5351 (Weighted: 2535.0590)
NLL Component: 16.4207
Min Variance: 1.94e-05
p1=0.253, p2=0.231
--- Iter [724/2000] ---
Total Loss: 2385.4094
MSE Component: 2.3686 (Weighted: 2368.6359)
NLL Component: 16.6856
Min Variance: 7.89e-06
p1=0.253, p2=0.231
--- Iter [725/2000] ---
Total Loss: 3048.9114
MSE Component: 3.0304 (Weighted: 3030.3898)
NLL Component: 18.4335
Min Variance: 5.06e-06
p1=0.253, p2=0.231
--- Iter [726/2000] ---
Total Loss: 2510.5466
MSE Component: 2.4865 (Weighted: 2486.5148)
NLL Component: 23.9438
Min Variance: 1.60e-05
p1=0.253, p2=0.231
--- Iter [727/2000] ---
Total Loss: 4034.7173
MSE Component: 4.0172 (Weighted: 4017.2162)
NLL Component: 17.4131
Min Variance: 1.14e-05
p1=0.253, p2=0.231
--- Iter [728/2000] ---
Total Loss: 2804.7139
MSE Component: 2.7879 (Weighted: 2787.9407)
NLL Component: 16.6852
Min Variance: 9.15e-06
p1=0.253, p2=0.231
--- Iter [729/2000] ---
Total Loss: 2416.9424
MSE Component: 2.3922 (Weighted: 2392.1618)
NLL Component: 24.6927

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    Min Variance: 6.21e-06
    p1=0.253, p2=0.231
--- Iter [730/2000] ---
    Total Loss: 2936.3484
    MSE Component: 2.9197 (Weighted: 2919.6963)
    NLL Component: 16.5642
    Min Variance: 1.00e-05
    p1=0.253, p2=0.231

--- Validation at iteration 730 ---
    Average MSE: 334.2152, Average ANEES: 478.4492
-----
--- Iter [731/2000] ---
    Total Loss: 4666.2588
    MSE Component: 4.6489 (Weighted: 4648.8614)
    NLL Component: 17.3094
    Min Variance: 1.29e-05
    p1=0.253, p2=0.231
--- Iter [732/2000] ---
    Total Loss: 2675.5496
    MSE Component: 2.6609 (Weighted: 2660.9449)
    NLL Component: 14.5169
    Min Variance: 2.13e-05
    p1=0.253, p2=0.231
--- Iter [733/2000] ---
    Total Loss: 3603.7104
    MSE Component: 3.5871 (Weighted: 3587.1403)
    NLL Component: 16.4823
    Min Variance: 9.16e-06
    p1=0.253, p2=0.231
--- Iter [734/2000] ---
    Total Loss: 3660.9919
    MSE Component: 3.6399 (Weighted: 3639.8532)
    NLL Component: 21.0508
    Min Variance: 1.08e-05
    p1=0.253, p2=0.231
--- Iter [735/2000] ---
    Total Loss: 2352.0818
    MSE Component: 2.3349 (Weighted: 2334.8515)
    NLL Component: 17.1424
    Min Variance: 1.32e-05
    p1=0.253, p2=0.231
--- Iter [736/2000] ---
    Total Loss: 1913.1700
    MSE Component: 1.9006 (Weighted: 1900.6064)
    NLL Component: 12.4759
    Min Variance: 7.65e-06
    p1=0.253, p2=0.231

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--- Iter [737/2000] ---
Total Loss: 4758.1270
MSE Component: 4.7372 (Weighted: 4737.2494)
NLL Component: 20.7895
Min Variance: 1.08e-05
p1=0.253, p2=0.231
--- Iter [738/2000] ---
Total Loss: 3849.7744
MSE Component: 3.8319 (Weighted: 3831.9094)
NLL Component: 17.7770
Min Variance: 1.08e-05
p1=0.253, p2=0.231
--- Iter [739/2000] ---
Total Loss: 3490.0500
MSE Component: 3.4681 (Weighted: 3468.0853)
NLL Component: 21.8770
Min Variance: 1.10e-05
p1=0.253, p2=0.231
--- Iter [740/2000] ---
Total Loss: 3727.0706
MSE Component: 3.7054 (Weighted: 3705.3919)
NLL Component: 21.5907
Min Variance: 1.14e-05
p1=0.253, p2=0.231

--- Validation at iteration 740 ---
Average MSE: 277.9489, Average ANEES: 578.2060
-----
--- Iter [741/2000] ---
Total Loss: 3996.5527
MSE Component: 3.9789 (Weighted: 3978.9147)
NLL Component: 17.5500
Min Variance: 8.40e-06
p1=0.253, p2=0.231
--- Iter [742/2000] ---
Total Loss: 3297.5793
MSE Component: 3.2836 (Weighted: 3283.5612)
NLL Component: 13.9301
Min Variance: 7.09e-06
p1=0.253, p2=0.231
--- Iter [743/2000] ---
Total Loss: 1774.3926
MSE Component: 1.7591 (Weighted: 1759.1244)
NLL Component: 15.1805
Min Variance: 2.23e-05
p1=0.253, p2=0.231
--- Iter [744/2000] ---
Total Loss: 3000.9509

```

```

MSE Component: 2.9872 (Weighted: 2987.2139)
NLL Component: 13.6491
Min Variance: 7.77e-06
p1=0.253, p2=0.231
--- Iter [745/2000] ---
Total Loss: 2679.1177
MSE Component: 2.6607 (Weighted: 2660.6958)
NLL Component: 18.3340
Min Variance: 1.26e-05
p1=0.253, p2=0.231
--- Iter [746/2000] ---
Total Loss: 5674.9414
MSE Component: 5.6601 (Weighted: 5660.0604)
NLL Component: 14.7929
Min Variance: 1.49e-05
p1=0.253, p2=0.231
--- Iter [747/2000] ---
Total Loss: 3321.0830
MSE Component: 3.3031 (Weighted: 3303.1218)
NLL Component: 17.8733
Min Variance: 1.25e-05
p1=0.253, p2=0.231
--- Iter [748/2000] ---
Total Loss: 2540.4155
MSE Component: 2.5262 (Weighted: 2526.1800)
NLL Component: 14.1476
Min Variance: 7.66e-06
p1=0.253, p2=0.231
--- Iter [749/2000] ---
Total Loss: 2104.5845
MSE Component: 2.0815 (Weighted: 2081.5165)
NLL Component: 22.9801
Min Variance: 8.24e-06
p1=0.253, p2=0.231
--- Iter [750/2000] ---
Total Loss: 3668.3843
MSE Component: 3.6495 (Weighted: 3649.4820)
NLL Component: 18.8145
Min Variance: 1.42e-05
p1=0.253, p2=0.231

--- Validation at iteration 750 ---
Average MSE: 272.2534, Average ANEES: 586.5477
-----
--- Iter [751/2000] ---
Total Loss: 3798.6484
MSE Component: 3.7773 (Weighted: 3777.3297)
NLL Component: 21.2310

```

```

    Min Variance: 1.02e-05
    p1=0.253, p2=0.231
--- Iter [752/2000] ---
    Total Loss: 4097.1445
    MSE Component: 4.0765 (Weighted: 4076.5033)
    NLL Component: 20.5537
    Min Variance: 1.74e-05
    p1=0.253, p2=0.231
--- Iter [753/2000] ---
    Total Loss: 3576.7788
    MSE Component: 3.5564 (Weighted: 3556.4382)
    NLL Component: 20.2527
    Min Variance: 1.05e-05
    p1=0.253, p2=0.231
--- Iter [754/2000] ---
    Total Loss: 3336.9131
    MSE Component: 3.3222 (Weighted: 3322.2058)
    NLL Component: 14.6193
    Min Variance: 1.03e-05
    p1=0.253, p2=0.231
--- Iter [755/2000] ---
    Total Loss: 2483.6555
    MSE Component: 2.4639 (Weighted: 2463.8977)
    NLL Component: 19.6700
    Min Variance: 6.91e-06
    p1=0.253, p2=0.231
--- Iter [756/2000] ---
    Total Loss: 2284.1204
    MSE Component: 2.2616 (Weighted: 2261.5592)
    NLL Component: 22.4731
    Min Variance: 1.45e-05
    p1=0.253, p2=0.231
--- Iter [757/2000] ---
    Total Loss: 2666.1697
    MSE Component: 2.6481 (Weighted: 2648.1247)
    NLL Component: 17.9569
    Min Variance: 1.72e-05
    p1=0.253, p2=0.231
--- Iter [758/2000] ---
    Total Loss: 2771.9993
    MSE Component: 2.7546 (Weighted: 2754.5514)
    NLL Component: 17.3598
    Min Variance: 2.16e-05
    p1=0.253, p2=0.231
--- Iter [759/2000] ---
    Total Loss: 2328.1060
    MSE Component: 2.3163 (Weighted: 2316.2699)
    NLL Component: 11.7484

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    Min Variance: 1.87e-05
    p1=0.253, p2=0.231
--- Iter [760/2000] ---
    Total Loss: 2233.8765
    MSE Component: 2.2124 (Weighted: 2212.3668)
    NLL Component: 21.4219
    Min Variance: 8.55e-06
    p1=0.253, p2=0.231

--- Validation at iteration 760 ---
    Average MSE: 285.5896, Average ANEES: 534.3270
-----
--- Iter [761/2000] ---
    Total Loss: 2852.1138
    MSE Component: 2.8364 (Weighted: 2836.3795)
    NLL Component: 15.6462
    Min Variance: 1.27e-05
    p1=0.253, p2=0.231
--- Iter [762/2000] ---
    Total Loss: 2868.8457
    MSE Component: 2.8449 (Weighted: 2844.8720)
    NLL Component: 23.8857
    Min Variance: 1.47e-06
    p1=0.253, p2=0.231
--- Iter [763/2000] ---
    Total Loss: 3801.8123
    MSE Component: 3.7855 (Weighted: 3785.4807)
    NLL Component: 16.2437
    Min Variance: 7.06e-06
    p1=0.253, p2=0.231
--- Iter [764/2000] ---
    Total Loss: 4741.1162
    MSE Component: 4.7256 (Weighted: 4725.6355)
    NLL Component: 15.3925
    Min Variance: 6.26e-06
    p1=0.253, p2=0.231
--- Iter [765/2000] ---
    Total Loss: 2086.9326
    MSE Component: 2.0675 (Weighted: 2067.5278)
    NLL Component: 19.3170
    Min Variance: 9.10e-06
    p1=0.253, p2=0.231
--- Iter [766/2000] ---
    Total Loss: 2170.7930
    MSE Component: 2.1550 (Weighted: 2154.9978)
    NLL Component: 15.7072
    Min Variance: 9.03e-06
    p1=0.253, p2=0.231

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--- Iter [767/2000] ---
Total Loss: 2394.4731
MSE Component: 2.3733 (Weighted: 2373.2650)
NLL Component: 21.1202
Min Variance: 5.18e-06
p1=0.253, p2=0.231
--- Iter [768/2000] ---
Total Loss: 3467.8298
MSE Component: 3.4509 (Weighted: 3450.9096)
NLL Component: 16.8323
Min Variance: 1.09e-05
p1=0.253, p2=0.231
--- Iter [769/2000] ---
Total Loss: 3371.3928
MSE Component: 3.3514 (Weighted: 3351.3854)
NLL Component: 19.9198
Min Variance: 6.85e-06
p1=0.253, p2=0.231
--- Iter [770/2000] ---
Total Loss: 4451.7012
MSE Component: 4.4339 (Weighted: 4433.8670)
NLL Component: 17.7463
Min Variance: 1.49e-05
p1=0.253, p2=0.231

--- Validation at iteration 770 ---
Average MSE: 341.2595, Average ANEES: 475.1324
-----
--- Iter [771/2000] ---
Total Loss: 5278.0352
MSE Component: 5.2633 (Weighted: 5263.3491)
NLL Component: 14.5980
Min Variance: 1.26e-05
p1=0.253, p2=0.231
--- Iter [772/2000] ---
Total Loss: 3777.2998
MSE Component: 3.7627 (Weighted: 3762.7463)
NLL Component: 14.4657
Min Variance: 1.13e-05
p1=0.253, p2=0.231
--- Iter [773/2000] ---
Total Loss: 2212.7793
MSE Component: 2.2005 (Weighted: 2200.4912)
NLL Component: 12.2003
Min Variance: 1.98e-05
p1=0.253, p2=0.231
--- Iter [774/2000] ---
Total Loss: 2915.9141

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MSE Component: 2.8881 (Weighted: 2888.0923)
NLL Component: 27.7340
Min Variance: 3.62e-06
p1=0.253, p2=0.231
--- Iter [775/2000] ---
Total Loss: 2148.9761
MSE Component: 2.1320 (Weighted: 2131.9706)
NLL Component: 16.9176
Min Variance: 9.64e-06
p1=0.253, p2=0.231
--- Iter [776/2000] ---
Total Loss: 4637.2358
MSE Component: 4.6151 (Weighted: 4615.0875)
NLL Component: 22.0608
Min Variance: 2.46e-06
p1=0.253, p2=0.231
--- Iter [777/2000] ---
Total Loss: 3867.5854
MSE Component: 3.8457 (Weighted: 3845.7451)
NLL Component: 21.7524
Min Variance: 1.10e-05
p1=0.252, p2=0.231
--- Iter [778/2000] ---
Total Loss: 4091.7021
MSE Component: 4.0765 (Weighted: 4076.5028)
NLL Component: 15.1115
Min Variance: 1.28e-05
p1=0.252, p2=0.231
--- Iter [779/2000] ---
Total Loss: 2124.5764
MSE Component: 2.1056 (Weighted: 2105.6166)
NLL Component: 18.8722
Min Variance: 1.49e-05
p1=0.252, p2=0.231
--- Iter [780/2000] ---
Total Loss: 2382.4182
MSE Component: 2.3659 (Weighted: 2365.8805)
NLL Component: 16.4500
Min Variance: 1.02e-05
p1=0.252, p2=0.231

--- Validation at iteration 780 ---
Average MSE: 317.6539, Average ANEES: 472.0672
-----
--- Iter [781/2000] ---
Total Loss: 1905.4667
MSE Component: 1.8867 (Weighted: 1886.6963)
NLL Component: 18.6826

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Min Variance: 1.57e-05
p1=0.252, p2=0.231
--- Iter [782/2000] ---
Total Loss: 4022.3071
MSE Component: 4.0068 (Weighted: 4006.7506)
NLL Component: 15.4687
Min Variance: 1.11e-05
p1=0.252, p2=0.231
--- Iter [783/2000] ---
Total Loss: 2651.6689
MSE Component: 2.6345 (Weighted: 2634.5065)
NLL Component: 17.0746
Min Variance: 1.55e-05
p1=0.252, p2=0.231
--- Iter [784/2000] ---
Total Loss: 2670.2605
MSE Component: 2.6563 (Weighted: 2656.2641)
NLL Component: 13.9084
Min Variance: 1.19e-05
p1=0.252, p2=0.231
--- Iter [785/2000] ---
Total Loss: 2368.9792
MSE Component: 2.3548 (Weighted: 2354.7843)
NLL Component: 14.1072
Min Variance: 9.34e-06
p1=0.252, p2=0.231
--- Iter [786/2000] ---
Total Loss: 2229.4197
MSE Component: 2.2108 (Weighted: 2210.7823)
NLL Component: 18.5495
Min Variance: 1.20e-05
p1=0.252, p2=0.231
--- Iter [787/2000] ---
Total Loss: 2446.7686
MSE Component: 2.4299 (Weighted: 2429.8675)
NLL Component: 16.8133
Min Variance: 1.48e-05
p1=0.252, p2=0.231
--- Iter [788/2000] ---
Total Loss: 2231.1892
MSE Component: 2.2114 (Weighted: 2211.3895)
NLL Component: 19.7118
Min Variance: 1.57e-05
p1=0.252, p2=0.231
--- Iter [789/2000] ---
Total Loss: 2886.7388
MSE Component: 2.8735 (Weighted: 2873.5464)
NLL Component: 13.1045

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    Min Variance: 2.17e-05
    p1=0.252, p2=0.231
--- Iter [790/2000] ---
    Total Loss: 2303.1711
    MSE Component: 2.2883 (Weighted: 2288.2838)
    NLL Component: 14.7992
    Min Variance: 1.34e-05
    p1=0.252, p2=0.231

--- Validation at iteration 790 ---
    Average MSE: 281.7083, Average ANEES: 526.1821
-----
--- Iter [791/2000] ---
    Total Loss: 1964.9937
    MSE Component: 1.9486 (Weighted: 1948.6082)
    NLL Component: 16.2977
    Min Variance: 9.28e-06
    p1=0.252, p2=0.231
--- Iter [792/2000] ---
    Total Loss: 2319.9934
    MSE Component: 2.2940 (Weighted: 2294.0190)
    NLL Component: 25.8864
    Min Variance: 1.98e-05
    p1=0.252, p2=0.231
--- Iter [793/2000] ---
    Total Loss: 2465.3809
    MSE Component: 2.4466 (Weighted: 2446.5909)
    NLL Component: 18.7022
    Min Variance: 5.92e-06
    p1=0.252, p2=0.231
--- Iter [794/2000] ---
    Total Loss: 2113.7039
    MSE Component: 2.1003 (Weighted: 2100.2562)
    NLL Component: 13.3599
    Min Variance: 4.48e-06
    p1=0.252, p2=0.231
--- Iter [795/2000] ---
    Total Loss: 2756.5247
    MSE Component: 2.7382 (Weighted: 2738.2202)
    NLL Component: 18.2166
    Min Variance: 1.31e-05
    p1=0.252, p2=0.231
--- Iter [796/2000] ---
    Total Loss: 2019.2393
    MSE Component: 1.9975 (Weighted: 1997.5016)
    NLL Component: 21.6499
    Min Variance: 4.72e-06
    p1=0.252, p2=0.231

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--- Iter [797/2000] ---
  Total Loss: 2924.1504
  MSE Component: 2.9032 (Weighted: 2903.2118)
  NLL Component: 20.8507
  Min Variance: 7.83e-06
  p1=0.252, p2=0.231
--- Iter [798/2000] ---
  Total Loss: 2215.5544
  MSE Component: 2.1979 (Weighted: 2197.9089)
  NLL Component: 17.5575
  Min Variance: 2.13e-05
  p1=0.252, p2=0.231
--- Iter [799/2000] ---
  Total Loss: 2521.1250
  MSE Component: 2.5025 (Weighted: 2502.5167)
  NLL Component: 18.5202
  Min Variance: 1.12e-05
  p1=0.252, p2=0.231
--- Iter [800/2000] ---
  Total Loss: 2513.9656
  MSE Component: 2.4981 (Weighted: 2498.0941)
  NLL Component: 15.7837
  Min Variance: 5.77e-06
  p1=0.252, p2=0.231

--- Validation at iteration 800 ---
  Average MSE: 245.9419, Average ANEES: 455.8888
-----
--- Iter [801/2000] ---
  Total Loss: 2558.8215
  MSE Component: 2.5359 (Weighted: 2535.9318)
  NLL Component: 22.8017
  Min Variance: 5.42e-06
  p1=0.252, p2=0.231
--- Iter [802/2000] ---
  Total Loss: 2740.0559
  MSE Component: 2.7211 (Weighted: 2721.0658)
  NLL Component: 18.9024
  Min Variance: 1.04e-05
  p1=0.252, p2=0.231
--- Iter [803/2000] ---
  Total Loss: 2091.5317
  MSE Component: 2.0771 (Weighted: 2077.0710)
  NLL Component: 14.3729
  Min Variance: 1.48e-05
  p1=0.252, p2=0.230
--- Iter [804/2000] ---
  Total Loss: 2594.5618

```

```

MSE Component: 2.5806 (Weighted: 2580.6003)
NLL Component: 13.8736
Min Variance: 6.58e-06
p1=0.252, p2=0.230
--- Iter [805/2000] ---
Total Loss: 2709.4597
MSE Component: 2.6816 (Weighted: 2681.6328)
NLL Component: 27.7390
Min Variance: 6.98e-06
p1=0.252, p2=0.230
--- Iter [806/2000] ---
Total Loss: 1932.6194
MSE Component: 1.9161 (Weighted: 1916.0832)
NLL Component: 16.4483
Min Variance: 1.19e-05
p1=0.252, p2=0.230
--- Iter [807/2000] ---
Total Loss: 1840.9539
MSE Component: 1.8271 (Weighted: 1827.1338)
NLL Component: 13.7323
Min Variance: 1.37e-05
p1=0.252, p2=0.230
--- Iter [808/2000] ---
Total Loss: 2238.4258
MSE Component: 2.2199 (Weighted: 2219.8682)
NLL Component: 18.4697
Min Variance: 1.14e-05
p1=0.252, p2=0.230
--- Iter [809/2000] ---
Total Loss: 2771.8030
MSE Component: 2.7576 (Weighted: 2757.6439)
NLL Component: 14.0712
Min Variance: 6.00e-06
p1=0.252, p2=0.230
--- Iter [810/2000] ---
Total Loss: 2499.6106
MSE Component: 2.4766 (Weighted: 2476.5525)
NLL Component: 22.9702
Min Variance: 8.86e-06
p1=0.252, p2=0.230

--- Validation at iteration 810 ---
Average MSE: 288.6045, Average ANEES: 557.4687
-----
--- Iter [811/2000] ---
Total Loss: 1927.6696
MSE Component: 1.9125 (Weighted: 1912.4645)
NLL Component: 15.1173

```

```

Min Variance: 4.68e-06
p1=0.252, p2=0.230
--- Iter [812/2000] ---
Total Loss: 2547.4888
MSE Component: 2.5247 (Weighted: 2524.7381)
NLL Component: 22.6628
Min Variance: 8.89e-06
p1=0.252, p2=0.230
--- Iter [813/2000] ---
Total Loss: 2820.1504
MSE Component: 2.7994 (Weighted: 2799.3982)
NLL Component: 20.6644
Min Variance: 1.14e-05
p1=0.252, p2=0.230
--- Iter [814/2000] ---
Total Loss: 2293.6597
MSE Component: 2.2800 (Weighted: 2280.0276)
NLL Component: 13.5442
Min Variance: 2.23e-05
p1=0.252, p2=0.230
--- Iter [815/2000] ---
Total Loss: 2833.9778
MSE Component: 2.8180 (Weighted: 2818.0165)
NLL Component: 15.8733
Min Variance: 7.58e-06
p1=0.252, p2=0.230
--- Iter [816/2000] ---
Total Loss: 5259.6460
MSE Component: 5.2415 (Weighted: 5241.4508)
NLL Component: 18.1075
Min Variance: 8.98e-06
p1=0.252, p2=0.230
--- Iter [817/2000] ---
Total Loss: 3031.8120
MSE Component: 3.0152 (Weighted: 3015.2233)
NLL Component: 16.5011
Min Variance: 6.69e-06
p1=0.252, p2=0.230
--- Iter [818/2000] ---
Total Loss: 2027.9740
MSE Component: 2.0146 (Weighted: 2014.5719)
NLL Component: 13.3144
Min Variance: 1.67e-05
p1=0.252, p2=0.230
--- Iter [819/2000] ---
Total Loss: 2305.6265
MSE Component: 2.2912 (Weighted: 2291.1849)
NLL Component: 14.3538

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    Min Variance: 6.01e-06
    p1=0.252, p2=0.230
--- Iter [820/2000] ---
    Total Loss: 3955.3555
    MSE Component: 3.9342 (Weighted: 3934.1812)
    NLL Component: 21.0865
    Min Variance: 1.37e-05
    p1=0.252, p2=0.230

--- Validation at iteration 820 ---
    Average MSE: 326.0136, Average ANEES: 466.6788
-----
--- Iter [821/2000] ---
    Total Loss: 2132.2773
    MSE Component: 2.1192 (Weighted: 2119.1702)
    NLL Component: 13.0193
    Min Variance: 1.87e-05
    p1=0.252, p2=0.230
--- Iter [822/2000] ---
    Total Loss: 3362.4189
    MSE Component: 3.3473 (Weighted: 3347.2626)
    NLL Component: 15.0684
    Min Variance: 6.76e-06
    p1=0.252, p2=0.230
--- Iter [823/2000] ---
    Total Loss: 2541.0732
    MSE Component: 2.5295 (Weighted: 2529.5439)
    NLL Component: 11.4413
    Min Variance: 7.40e-06
    p1=0.252, p2=0.230
--- Iter [824/2000] ---
    Total Loss: 2035.1152
    MSE Component: 2.0199 (Weighted: 2019.9432)
    NLL Component: 15.0842
    Min Variance: 1.00e-05
    p1=0.252, p2=0.230
--- Iter [825/2000] ---
    Total Loss: 2860.2261
    MSE Component: 2.8459 (Weighted: 2845.8939)
    NLL Component: 14.2443
    Min Variance: 1.25e-05
    p1=0.252, p2=0.230
--- Iter [826/2000] ---
    Total Loss: 2789.3076
    MSE Component: 2.7714 (Weighted: 2771.4338)
    NLL Component: 17.7858
    Min Variance: 1.39e-05
    p1=0.252, p2=0.230

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--- Iter [827/2000] ---
Total Loss: 2410.2937
MSE Component: 2.3930 (Weighted: 2393.0099)
NLL Component: 17.1958
Min Variance: 9.33e-06
p1=0.252, p2=0.230
--- Iter [828/2000] ---
Total Loss: 2928.8005
MSE Component: 2.9031 (Weighted: 2903.1374)
NLL Component: 25.5751
Min Variance: 1.00e-05
p1=0.252, p2=0.230
--- Iter [829/2000] ---
Total Loss: 2016.6771
MSE Component: 2.0007 (Weighted: 2000.6719)
NLL Component: 15.9175
Min Variance: 9.32e-06
p1=0.252, p2=0.230
--- Iter [830/2000] ---
Total Loss: 2375.0718
MSE Component: 2.3641 (Weighted: 2364.1014)
NLL Component: 10.8826
Min Variance: 8.82e-06
p1=0.252, p2=0.230

--- Validation at iteration 830 ---
Average MSE: 277.2944, Average ANEES: 628.0983
-----
--- Iter [831/2000] ---
Total Loss: 2269.7634
MSE Component: 2.2543 (Weighted: 2254.2520)
NLL Component: 15.4236
Min Variance: 5.33e-06
p1=0.252, p2=0.230
--- Iter [832/2000] ---
Total Loss: 3139.2134
MSE Component: 3.1174 (Weighted: 3117.3615)
NLL Component: 21.7640
Min Variance: 1.19e-05
p1=0.252, p2=0.230
--- Iter [833/2000] ---
Total Loss: 2684.6582
MSE Component: 2.6632 (Weighted: 2663.1932)
NLL Component: 21.3772
Min Variance: 3.33e-06
p1=0.252, p2=0.230
--- Iter [834/2000] ---
Total Loss: 2202.3564

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```

MSE Component: 2.1884 (Weighted: 2188.3550)
NLL Component: 13.9136
Min Variance: 1.67e-05
p1=0.252, p2=0.230
--- Iter [835/2000] ---
Total Loss: 2518.1494
MSE Component: 2.5017 (Weighted: 2501.7126)
NLL Component: 16.3489
Min Variance: 1.28e-05
p1=0.252, p2=0.230
--- Iter [836/2000] ---
Total Loss: 2714.8091
MSE Component: 2.6953 (Weighted: 2695.3087)
NLL Component: 19.4126
Min Variance: 1.32e-05
p1=0.252, p2=0.230
--- Iter [837/2000] ---
Total Loss: 2687.0093
MSE Component: 2.6673 (Weighted: 2667.3267)
NLL Component: 19.5947
Min Variance: 1.12e-05
p1=0.252, p2=0.230
--- Iter [838/2000] ---
Total Loss: 2599.9390
MSE Component: 2.5780 (Weighted: 2577.9557)
NLL Component: 21.8952
Min Variance: 7.12e-06
p1=0.252, p2=0.230
--- Iter [839/2000] ---
Total Loss: 2032.4342
MSE Component: 2.0141 (Weighted: 2014.1294)
NLL Component: 18.2171
Min Variance: 4.53e-06
p1=0.252, p2=0.230
--- Iter [840/2000] ---
Total Loss: 2210.7822
MSE Component: 2.1995 (Weighted: 2199.5170)
NLL Component: 11.1771
Min Variance: 1.94e-05
p1=0.252, p2=0.230

--- Validation at iteration 840 ---
Average MSE: 272.5352, Average ANEES: 615.3119
-----
--- Iter [841/2000] ---
Total Loss: 1897.8237
MSE Component: 1.8836 (Weighted: 1883.5876)
NLL Component: 14.1483

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```

Min Variance: 1.25e-05
p1=0.252, p2=0.230
--- Iter [842/2000] ---
Total Loss: 2205.1648
MSE Component: 2.1919 (Weighted: 2191.8542)
NLL Component: 13.2227
Min Variance: 8.82e-06
p1=0.252, p2=0.230
--- Iter [843/2000] ---
Total Loss: 2663.6499
MSE Component: 2.6456 (Weighted: 2645.5514)
NLL Component: 18.0105
Min Variance: 9.05e-06
p1=0.252, p2=0.230
--- Iter [844/2000] ---
Total Loss: 2141.6362
MSE Component: 2.1254 (Weighted: 2125.4075)
NLL Component: 16.1409
Min Variance: 3.74e-06
p1=0.252, p2=0.230
--- Iter [845/2000] ---
Total Loss: 2031.4050
MSE Component: 2.0157 (Weighted: 2015.6689)
NLL Component: 15.6485
Min Variance: 1.55e-05
p1=0.252, p2=0.230
--- Iter [846/2000] ---
Total Loss: 3151.7532
MSE Component: 3.1336 (Weighted: 3133.5723)
NLL Component: 18.0929
Min Variance: 8.47e-06
p1=0.252, p2=0.230
--- Iter [847/2000] ---
Total Loss: 3060.6533
MSE Component: 3.0469 (Weighted: 3046.9234)
NLL Component: 13.6420
Min Variance: 4.40e-06
p1=0.252, p2=0.230
--- Iter [848/2000] ---
Total Loss: 1989.6495
MSE Component: 1.9731 (Weighted: 1973.0619)
NLL Component: 16.4999
Min Variance: 1.45e-05
p1=0.252, p2=0.230
--- Iter [849/2000] ---
Total Loss: 1661.8575
MSE Component: 1.6424 (Weighted: 1642.3775)
NLL Component: 19.3924

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    Min Variance: 9.57e-06
    p1=0.252, p2=0.230
--- Iter [850/2000] ---
    Total Loss: 2062.0481
    MSE Component: 2.0484 (Weighted: 2048.3983)
    NLL Component: 13.5620
    Min Variance: 5.80e-06
    p1=0.252, p2=0.230

--- Validation at iteration 850 ---
    Average MSE: 271.8113, Average ANEES: 651.3135
-----
--- Iter [851/2000] ---
    Total Loss: 1938.1810
    MSE Component: 1.9230 (Weighted: 1922.9711)
    NLL Component: 15.1222
    Min Variance: 1.71e-05
    p1=0.252, p2=0.230
--- Iter [852/2000] ---
    Total Loss: 2081.0081
    MSE Component: 2.0595 (Weighted: 2059.4969)
    NLL Component: 21.4232
    Min Variance: 8.36e-06
    p1=0.252, p2=0.230
--- Iter [853/2000] ---
    Total Loss: 2446.9563
    MSE Component: 2.4234 (Weighted: 2423.4016)
    NLL Component: 23.4667
    Min Variance: 1.13e-05
    p1=0.252, p2=0.230
--- Iter [854/2000] ---
    Total Loss: 2402.1648
    MSE Component: 2.3901 (Weighted: 2390.0776)
    NLL Component: 11.9994
    Min Variance: 1.02e-05
    p1=0.252, p2=0.230
--- Iter [855/2000] ---
    Total Loss: 1867.9906
    MSE Component: 1.8523 (Weighted: 1852.3290)
    NLL Component: 15.5739
    Min Variance: 1.13e-05
    p1=0.252, p2=0.230
--- Iter [856/2000] ---
    Total Loss: 1823.1039
    MSE Component: 1.8066 (Weighted: 1806.6487)
    NLL Component: 16.3675
    Min Variance: 7.25e-06
    p1=0.252, p2=0.230

```

```

--- Iter [857/2000] ---
Total Loss: 3534.5291
MSE Component: 3.5168 (Weighted: 3516.7704)
NLL Component: 17.6709
Min Variance: 1.15e-05
p1=0.252, p2=0.230
--- Iter [858/2000] ---
Total Loss: 3490.7219
MSE Component: 3.4756 (Weighted: 3475.5988)
NLL Component: 15.0351
Min Variance: 1.39e-05
p1=0.252, p2=0.230
--- Iter [859/2000] ---
Total Loss: 2505.6702
MSE Component: 2.4882 (Weighted: 2488.1575)
NLL Component: 17.4248
Min Variance: 6.37e-06
p1=0.252, p2=0.230
--- Iter [860/2000] ---
Total Loss: 3033.1050
MSE Component: 3.0194 (Weighted: 3019.4330)
NLL Component: 13.5839
Min Variance: 1.65e-05
p1=0.252, p2=0.230

--- Validation at iteration 860 ---
Average MSE: 265.6339, Average ANEES: 486.4980
-----
--- Iter [861/2000] ---
Total Loss: 2250.1345
MSE Component: 2.2340 (Weighted: 2234.0035)
NLL Component: 16.0429
Min Variance: 9.04e-06
p1=0.252, p2=0.230
--- Iter [862/2000] ---
Total Loss: 1666.7218
MSE Component: 1.6515 (Weighted: 1651.4572)
NLL Component: 15.1769
Min Variance: 9.78e-06
p1=0.252, p2=0.230
--- Iter [863/2000] ---
Total Loss: 2182.3242
MSE Component: 2.1662 (Weighted: 2166.1513)
NLL Component: 16.0849
Min Variance: 1.22e-05
p1=0.252, p2=0.230
--- Iter [864/2000] ---
Total Loss: 2130.0398

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```

MSE Component: 2.1165 (Weighted: 2116.5304)
NLL Component: 13.4214
Min Variance: 1.69e-05
p1=0.252, p2=0.230
--- Iter [865/2000] ---
Total Loss: 1878.3347
MSE Component: 1.8564 (Weighted: 1856.4068)
NLL Component: 21.8401
Min Variance: 8.58e-06
p1=0.252, p2=0.230
--- Iter [866/2000] ---
Total Loss: 1939.5787
MSE Component: 1.9265 (Weighted: 1926.4704)
NLL Component: 13.0205
Min Variance: 1.00e-05
p1=0.252, p2=0.230
--- Iter [867/2000] ---
Total Loss: 2161.9873
MSE Component: 2.1483 (Weighted: 2148.3388)
NLL Component: 13.5605
Min Variance: 2.26e-05
p1=0.252, p2=0.230
--- Iter [868/2000] ---
Total Loss: 1946.6581
MSE Component: 1.9320 (Weighted: 1931.9568)
NLL Component: 14.6136
Min Variance: 1.10e-05
p1=0.252, p2=0.230
--- Iter [869/2000] ---
Total Loss: 2227.6304
MSE Component: 2.2127 (Weighted: 2212.6904)
NLL Component: 14.8522
Min Variance: 1.17e-05
p1=0.252, p2=0.230
--- Iter [870/2000] ---
Total Loss: 1997.9833
MSE Component: 1.9779 (Weighted: 1977.8907)
NLL Component: 20.0047
Min Variance: 1.32e-05
p1=0.252, p2=0.230

--- Validation at iteration 870 ---
Average MSE: 260.4490, Average ANEES: 597.6205
-----
--- Iter [871/2000] ---
Total Loss: 1659.3558
MSE Component: 1.6472 (Weighted: 1647.1913)
NLL Component: 12.0767

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Min Variance: 1.87e-05
p1=0.252, p2=0.230
--- Iter [872/2000] ---
Total Loss: 1789.7532
MSE Component: 1.7751 (Weighted: 1775.0748)
NLL Component: 14.5905
Min Variance: 1.62e-05
p1=0.252, p2=0.230
--- Iter [873/2000] ---
Total Loss: 2143.8352
MSE Component: 2.1270 (Weighted: 2126.9753)
NLL Component: 16.7723
Min Variance: 1.02e-05
p1=0.252, p2=0.230
--- Iter [874/2000] ---
Total Loss: 2426.2490
MSE Component: 2.4103 (Weighted: 2410.3193)
NLL Component: 15.8421
Min Variance: 2.18e-05
p1=0.252, p2=0.230
--- Iter [875/2000] ---
Total Loss: 2505.2458
MSE Component: 2.4863 (Weighted: 2486.2990)
NLL Component: 18.8592
Min Variance: 7.21e-06
p1=0.252, p2=0.230
--- Iter [876/2000] ---
Total Loss: 2335.1445
MSE Component: 2.3191 (Weighted: 2319.0653)
NLL Component: 15.9913
Min Variance: 2.01e-05
p1=0.252, p2=0.230
--- Iter [877/2000] ---
Total Loss: 1995.6320
MSE Component: 1.9805 (Weighted: 1980.5095)
NLL Component: 15.0346
Min Variance: 3.33e-06
p1=0.252, p2=0.230
--- Iter [878/2000] ---
Total Loss: 1891.1146
MSE Component: 1.8779 (Weighted: 1877.9290)
NLL Component: 13.0979
Min Variance: 1.01e-05
p1=0.251, p2=0.230
--- Iter [879/2000] ---
Total Loss: 2341.4072
MSE Component: 2.3219 (Weighted: 2321.8694)
NLL Component: 19.4502

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    Min Variance: 1.52e-05
    p1=0.251, p2=0.230
--- Iter [880/2000] ---
    Total Loss: 2121.6333
    MSE Component: 2.1068 (Weighted: 2106.7796)
    NLL Component: 14.7662
    Min Variance: 1.13e-05
    p1=0.251, p2=0.230

--- Validation at iteration 880 ---
    Average MSE: 263.3764, Average ANEES: 569.3655
-----
--- Iter [881/2000] ---
    Total Loss: 2730.5938
    MSE Component: 2.7185 (Weighted: 2718.5466)
    NLL Component: 11.9595
    Min Variance: 1.05e-05
    p1=0.251, p2=0.230
--- Iter [882/2000] ---
    Total Loss: 2336.7468
    MSE Component: 2.3196 (Weighted: 2319.5655)
    NLL Component: 17.0937
    Min Variance: 7.11e-06
    p1=0.251, p2=0.230
--- Iter [883/2000] ---
    Total Loss: 2336.1470
    MSE Component: 2.3181 (Weighted: 2318.0971)
    NLL Component: 17.9622
    Min Variance: 9.42e-06
    p1=0.251, p2=0.230
--- Iter [884/2000] ---
    Total Loss: 1939.7407
    MSE Component: 1.9235 (Weighted: 1923.5139)
    NLL Component: 16.1390
    Min Variance: 9.61e-06
    p1=0.251, p2=0.230
--- Iter [885/2000] ---
    Total Loss: 1791.7461
    MSE Component: 1.7790 (Weighted: 1778.9969)
    NLL Component: 12.6613
    Min Variance: 5.64e-06
    p1=0.251, p2=0.230
--- Iter [886/2000] ---
    Total Loss: 2003.4729
    MSE Component: 1.9883 (Weighted: 1988.3083)
    NLL Component: 15.0767
    Min Variance: 5.67e-06
    p1=0.251, p2=0.230

```



```

--- Iter [887/2000] ---
Total Loss: 2658.6111
MSE Component: 2.6400 (Weighted: 2639.9732)
NLL Component: 18.5504
Min Variance: 1.89e-05
p1=0.251, p2=0.230
--- Iter [888/2000] ---
Total Loss: 3270.8745
MSE Component: 3.2573 (Weighted: 3257.2951)
NLL Component: 13.4916
Min Variance: 1.10e-05
p1=0.251, p2=0.230
--- Iter [889/2000] ---
Total Loss: 2262.4668
MSE Component: 2.2425 (Weighted: 2242.4839)
NLL Component: 19.8953
Min Variance: 4.77e-06
p1=0.251, p2=0.230
--- Iter [890/2000] ---
Total Loss: 2025.0531
MSE Component: 2.0071 (Weighted: 2007.1208)
NLL Component: 17.8445
Min Variance: 8.08e-06
p1=0.251, p2=0.230

--- Validation at iteration 890 ---
Average MSE: 261.5341, Average ANEES: 601.3256
-----
--- Iter [891/2000] ---
Total Loss: 2635.8960
MSE Component: 2.6231 (Weighted: 2623.1143)
NLL Component: 12.6941
Min Variance: 1.00e-05
p1=0.251, p2=0.230
--- Iter [892/2000] ---
Total Loss: 1861.8276
MSE Component: 1.8498 (Weighted: 1849.8033)
NLL Component: 11.9365
Min Variance: 8.09e-06
p1=0.251, p2=0.230
--- Iter [893/2000] ---
Total Loss: 4040.4578
MSE Component: 4.0276 (Weighted: 4027.6098)
NLL Component: 12.7602
Min Variance: 1.07e-05
p1=0.251, p2=0.230
--- Iter [894/2000] ---
Total Loss: 2892.4226

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```

MSE Component: 2.8733 (Weighted: 2873.3017)
NLL Component: 19.0333
Min Variance: 1.30e-06
p1=0.251, p2=0.230
--- Iter [895/2000] ---
Total Loss: 2048.8240
MSE Component: 2.0367 (Weighted: 2036.7489)
NLL Component: 11.9873
Min Variance: 3.49e-06
p1=0.251, p2=0.230
--- Iter [896/2000] ---
Total Loss: 2841.2471
MSE Component: 2.8203 (Weighted: 2820.3497)
NLL Component: 20.8099
Min Variance: 7.41e-06
p1=0.251, p2=0.230
--- Iter [897/2000] ---
Total Loss: 2555.7544
MSE Component: 2.5415 (Weighted: 2541.4851)
NLL Component: 14.1816
Min Variance: 6.20e-06
p1=0.251, p2=0.230
--- Iter [898/2000] ---
Total Loss: 2725.6704
MSE Component: 2.7049 (Weighted: 2704.9026)
NLL Component: 20.6801
Min Variance: 7.66e-06
p1=0.251, p2=0.230
--- Iter [899/2000] ---
Total Loss: 4036.7727
MSE Component: 4.0187 (Weighted: 4018.7173)
NLL Component: 17.9678
Min Variance: 1.31e-05
p1=0.251, p2=0.230
--- Iter [900/2000] ---
Total Loss: 2718.3442
MSE Component: 2.6998 (Weighted: 2699.7705)
NLL Component: 18.4861
Min Variance: 1.17e-05
p1=0.251, p2=0.230

--- Validation at iteration 900 ---
Average MSE: 255.1215, Average ANEES: 611.3295
-----
--- Iter [901/2000] ---
Total Loss: 2961.1179
MSE Component: 2.9472 (Weighted: 2947.2008)
NLL Component: 13.8295

```

```

Min Variance: 1.62e-05
p1=0.251, p2=0.230
--- Iter [902/2000] ---
Total Loss: 2543.7566
MSE Component: 2.5258 (Weighted: 2525.8160)
NLL Component: 17.8531
Min Variance: 1.18e-05
p1=0.251, p2=0.230
--- Iter [903/2000] ---
Total Loss: 1962.7551
MSE Component: 1.9485 (Weighted: 1948.4688)
NLL Component: 14.1986
Min Variance: 5.23e-06
p1=0.251, p2=0.230
--- Iter [904/2000] ---
Total Loss: 2513.3901
MSE Component: 2.4981 (Weighted: 2498.0881)
NLL Component: 15.2143
Min Variance: 1.72e-05
p1=0.251, p2=0.230
--- Iter [905/2000] ---
Total Loss: 2992.9202
MSE Component: 2.9738 (Weighted: 2973.8271)
NLL Component: 19.0054
Min Variance: 1.24e-05
p1=0.251, p2=0.230
--- Iter [906/2000] ---
Total Loss: 2427.6663
MSE Component: 2.4100 (Weighted: 2409.9565)
NLL Component: 17.6220
Min Variance: 1.44e-05
p1=0.251, p2=0.230
--- Iter [907/2000] ---
Total Loss: 4788.3687
MSE Component: 4.7710 (Weighted: 4770.9885)
NLL Component: 17.2925
Min Variance: 1.60e-05
p1=0.251, p2=0.230
--- Iter [908/2000] ---
Total Loss: 3210.9841
MSE Component: 3.1955 (Weighted: 3195.4837)
NLL Component: 15.4128
Min Variance: 1.23e-05
p1=0.251, p2=0.230
--- Iter [909/2000] ---
Total Loss: 4423.4780
MSE Component: 4.4079 (Weighted: 4407.8841)
NLL Component: 15.5059

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```

    Min Variance: 1.18e-05
    p1=0.251, p2=0.230
--- Iter [910/2000] ---
    Total Loss: 2132.4531
    MSE Component: 2.1202 (Weighted: 2120.1537)
    NLL Component: 12.2120
    Min Variance: 3.29e-05
    p1=0.251, p2=0.230

--- Validation at iteration 910 ---
    Average MSE: 288.5899, Average ANEES: 521.8337
-----
--- Iter [911/2000] ---
    Total Loss: 2540.8804
    MSE Component: 2.5263 (Weighted: 2526.2592)
    NLL Component: 14.5334
    Min Variance: 4.92e-06
    p1=0.251, p2=0.230
--- Iter [912/2000] ---
    Total Loss: 2161.2625
    MSE Component: 2.1469 (Weighted: 2146.9460)
    NLL Component: 14.2288
    Min Variance: 1.59e-05
    p1=0.251, p2=0.230
--- Iter [913/2000] ---
    Total Loss: 2613.1914
    MSE Component: 2.5961 (Weighted: 2596.1323)
    NLL Component: 16.9715
    Min Variance: 1.27e-05
    p1=0.251, p2=0.230
--- Iter [914/2000] ---
    Total Loss: 1993.3024
    MSE Component: 1.9803 (Weighted: 1980.3278)
    NLL Component: 12.8867
    Min Variance: 1.60e-05
    p1=0.251, p2=0.230
--- Iter [915/2000] ---
    Total Loss: 2440.1025
    MSE Component: 2.4241 (Weighted: 2424.1295)
    NLL Component: 15.8854
    Min Variance: 1.14e-05
    p1=0.251, p2=0.230
--- Iter [916/2000] ---
    Total Loss: 3693.0193
    MSE Component: 3.6811 (Weighted: 3681.0994)
    NLL Component: 11.8322
    Min Variance: 1.51e-05
    p1=0.251, p2=0.230

```

```

--- Iter [917/2000] ---
Total Loss: 2546.2488
MSE Component: 2.5332 (Weighted: 2533.2041)
NLL Component: 12.9570
Min Variance: 1.45e-05
p1=0.251, p2=0.230
--- Iter [918/2000] ---
Total Loss: 3036.6382
MSE Component: 3.0113 (Weighted: 3011.3444)
NLL Component: 25.2060
Min Variance: 1.17e-05
p1=0.251, p2=0.230
--- Iter [919/2000] ---
Total Loss: 2161.4663
MSE Component: 2.1469 (Weighted: 2146.9202)
NLL Component: 14.4586
Min Variance: 4.88e-06
p1=0.251, p2=0.230
--- Iter [920/2000] ---
Total Loss: 2190.1387
MSE Component: 2.1776 (Weighted: 2177.5930)
NLL Component: 12.4580
Min Variance: 1.68e-05
p1=0.251, p2=0.230

--- Validation at iteration 920 ---
Average MSE: 241.3185, Average ANEES: 589.6091
-----
--- Iter [921/2000] ---
Total Loss: 2234.8496
MSE Component: 2.2153 (Weighted: 2215.3077)
NLL Component: 19.4544
Min Variance: 8.96e-06
p1=0.251, p2=0.230
--- Iter [922/2000] ---
Total Loss: 2472.2708
MSE Component: 2.4552 (Weighted: 2455.2302)
NLL Component: 16.9528
Min Variance: 1.14e-05
p1=0.251, p2=0.230
--- Iter [923/2000] ---
Total Loss: 3278.7849
MSE Component: 3.2617 (Weighted: 3261.7273)
NLL Component: 16.9701
Min Variance: 1.76e-05
p1=0.251, p2=0.230
--- Iter [924/2000] ---
Total Loss: 4735.5527

```

```

MSE Component: 4.7224 (Weighted: 4722.3768)
NLL Component: 13.0880
Min Variance: 1.00e-05
p1=0.251, p2=0.230
--- Iter [925/2000] ---
Total Loss: 4234.4556
MSE Component: 4.2189 (Weighted: 4218.8792)
NLL Component: 15.4881
Min Variance: 2.61e-05
p1=0.251, p2=0.230
--- Iter [926/2000] ---
Total Loss: 2083.9028
MSE Component: 2.0667 (Weighted: 2066.6609)
NLL Component: 17.1543
Min Variance: 5.76e-06
p1=0.251, p2=0.230
--- Iter [927/2000] ---
Total Loss: 2762.4722
MSE Component: 2.7458 (Weighted: 2745.8222)
NLL Component: 16.5623
Min Variance: 1.09e-05
p1=0.251, p2=0.230
--- Iter [928/2000] ---
Total Loss: 1937.6721
MSE Component: 1.9216 (Weighted: 1921.6352)
NLL Component: 15.9492
Min Variance: 1.36e-05
p1=0.251, p2=0.230
--- Iter [929/2000] ---
Total Loss: 2271.1355
MSE Component: 2.2600 (Weighted: 2260.0212)
NLL Component: 11.0266
Min Variance: 9.30e-06
p1=0.251, p2=0.230
--- Iter [930/2000] ---
Total Loss: 1846.3770
MSE Component: 1.8306 (Weighted: 1830.5944)
NLL Component: 15.6948
Min Variance: 9.50e-06
p1=0.251, p2=0.230

--- Validation at iteration 930 ---
Average MSE: 246.5891, Average ANEES: 524.8589
-----
--- Iter [931/2000] ---
Total Loss: 1988.9612
MSE Component: 1.9738 (Weighted: 1973.8177)
NLL Component: 15.0557

```

```

Min Variance: 9.36e-06
p1=0.251, p2=0.230
--- Iter [932/2000] ---
Total Loss: 2982.9805
MSE Component: 2.9695 (Weighted: 2969.4874)
NLL Component: 13.4052
Min Variance: 5.58e-06
p1=0.251, p2=0.230
--- Iter [933/2000] ---
Total Loss: 2841.5759
MSE Component: 2.8235 (Weighted: 2823.4682)
NLL Component: 18.0201
Min Variance: 1.88e-05
p1=0.251, p2=0.230
--- Iter [934/2000] ---
Total Loss: 2821.6541
MSE Component: 2.8014 (Weighted: 2801.3620)
NLL Component: 20.2044
Min Variance: 1.19e-05
p1=0.251, p2=0.230
--- Iter [935/2000] ---
Total Loss: 1992.7668
MSE Component: 1.9777 (Weighted: 1977.7071)
NLL Component: 14.9719
Min Variance: 2.46e-06
p1=0.251, p2=0.230
--- Iter [936/2000] ---
Total Loss: 1787.1149
MSE Component: 1.7706 (Weighted: 1770.5982)
NLL Component: 16.4289
Min Variance: 2.09e-05
p1=0.251, p2=0.230
--- Iter [937/2000] ---
Total Loss: 1901.6805
MSE Component: 1.8876 (Weighted: 1887.6233)
NLL Component: 13.9695
Min Variance: 2.22e-05
p1=0.251, p2=0.230
--- Iter [938/2000] ---
Total Loss: 2829.8220
MSE Component: 2.8149 (Weighted: 2814.9447)
NLL Component: 14.7895
Min Variance: 8.32e-06
p1=0.251, p2=0.230
--- Iter [939/2000] ---
Total Loss: 2840.2827
MSE Component: 2.8225 (Weighted: 2822.5293)
NLL Component: 17.6658

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    Min Variance: 1.30e-05
    p1=0.251, p2=0.230
--- Iter [940/2000] ---
    Total Loss: 2601.5603
    MSE Component: 2.5906 (Weighted: 2590.6193)
    NLL Component: 10.8534
    Min Variance: 1.34e-05
    p1=0.251, p2=0.230

--- Validation at iteration 940 ---
    Average MSE: 259.7339, Average ANEES: 535.3651
-----
--- Iter [941/2000] ---
    Total Loss: 2161.8799
    MSE Component: 2.1477 (Weighted: 2147.6567)
    NLL Component: 14.1355
    Min Variance: 6.14e-06
    p1=0.251, p2=0.230
--- Iter [942/2000] ---
    Total Loss: 2091.1069
    MSE Component: 2.0823 (Weighted: 2082.2511)
    NLL Component: 8.7682
    Min Variance: 1.86e-05
    p1=0.251, p2=0.230
--- Iter [943/2000] ---
    Total Loss: 2214.6360
    MSE Component: 2.1992 (Weighted: 2199.1937)
    NLL Component: 15.3547
    Min Variance: 5.86e-06
    p1=0.251, p2=0.230
--- Iter [944/2000] ---
    Total Loss: 2259.9363
    MSE Component: 2.2480 (Weighted: 2247.9782)
    NLL Component: 11.8703
    Min Variance: 2.80e-05
    p1=0.251, p2=0.230
--- Iter [945/2000] ---
    Total Loss: 1699.3459
    MSE Component: 1.6841 (Weighted: 1684.0614)
    NLL Component: 15.1968
    Min Variance: 1.39e-05
    p1=0.251, p2=0.230
--- Iter [946/2000] ---
    Total Loss: 2846.5913
    MSE Component: 2.8307 (Weighted: 2830.6527)
    NLL Component: 15.8509
    Min Variance: 8.72e-06
    p1=0.251, p2=0.230

```



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--- Iter [947/2000] ---
Total Loss: 2619.8074
MSE Component: 2.6064 (Weighted: 2606.4279)
NLL Component: 13.2916
Min Variance: 1.38e-05
p1=0.251, p2=0.230
--- Iter [948/2000] ---
Total Loss: 2808.6404
MSE Component: 2.7916 (Weighted: 2791.6274)
NLL Component: 16.9252
Min Variance: 2.12e-05
p1=0.251, p2=0.230
--- Iter [949/2000] ---
Total Loss: 3370.4487
MSE Component: 3.3511 (Weighted: 3351.1033)
NLL Component: 19.2578
Min Variance: 7.12e-06
p1=0.251, p2=0.230
--- Iter [950/2000] ---
Total Loss: 2136.5430
MSE Component: 2.1267 (Weighted: 2126.7021)
NLL Component: 9.7532
Min Variance: 1.08e-05
p1=0.251, p2=0.230

--- Validation at iteration 950 ---
Average MSE: 256.9391, Average ANEES: 504.6030
-----
--- Iter [951/2000] ---
Total Loss: 1714.3954
MSE Component: 1.7029 (Weighted: 1702.8946)
NLL Component: 11.4131
Min Variance: 1.86e-05
p1=0.251, p2=0.230
--- Iter [952/2000] ---
Total Loss: 1894.1893
MSE Component: 1.8795 (Weighted: 1879.4802)
NLL Component: 14.6214
Min Variance: 1.64e-05
p1=0.251, p2=0.230
--- Iter [953/2000] ---
Total Loss: 3339.8506
MSE Component: 3.3290 (Weighted: 3328.9628)
NLL Component: 10.8002
Min Variance: 8.94e-06
p1=0.251, p2=0.230
--- Iter [954/2000] ---
Total Loss: 2853.2087

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MSE Component: 2.8337 (Weighted: 2833.7314)
NLL Component: 19.3896
Min Variance: 1.33e-05
p1=0.251, p2=0.230
--- Iter [955/2000] ---
Total Loss: 2658.6584
MSE Component: 2.6497 (Weighted: 2649.7288)
NLL Component: 8.8421
Min Variance: 8.18e-06
p1=0.251, p2=0.230
--- Iter [956/2000] ---
Total Loss: 2595.6401
MSE Component: 2.5807 (Weighted: 2580.6832)
NLL Component: 14.8691
Min Variance: 1.95e-05
p1=0.251, p2=0.230
--- Iter [957/2000] ---
Total Loss: 2448.2136
MSE Component: 2.4351 (Weighted: 2435.0920)
NLL Component: 13.0340
Min Variance: 1.17e-05
p1=0.251, p2=0.230
--- Iter [958/2000] ---
Total Loss: 1720.5116
MSE Component: 1.7071 (Weighted: 1707.1075)
NLL Component: 13.3162
Min Variance: 1.13e-05
p1=0.251, p2=0.230
--- Iter [959/2000] ---
Total Loss: 1640.9423
MSE Component: 1.6255 (Weighted: 1625.4789)
NLL Component: 15.3756
Min Variance: 1.53e-05
p1=0.251, p2=0.230
--- Iter [960/2000] ---
Total Loss: 3335.0940
MSE Component: 3.3060 (Weighted: 3305.9688)
NLL Component: 29.0376
Min Variance: 1.56e-05
p1=0.251, p2=0.230

--- Validation at iteration 960 ---
Average MSE: 260.2811, Average ANEES: 461.6568
-----
--- Iter [961/2000] ---
Total Loss: 2123.0676
MSE Component: 2.1075 (Weighted: 2107.4834)
NLL Component: 15.4965

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    Min Variance: 2.25e-05
    p1=0.251, p2=0.230
--- Iter [962/2000] ---
    Total Loss: 3442.2043
    MSE Component: 3.4238 (Weighted: 3423.7745)
    NLL Component: 18.3423
    Min Variance: 1.98e-05
    p1=0.251, p2=0.230
--- Iter [963/2000] ---
    Total Loss: 2655.7422
    MSE Component: 2.6433 (Weighted: 2643.3039)
    NLL Component: 12.3505
    Min Variance: 1.13e-05
    p1=0.251, p2=0.230
--- Iter [964/2000] ---
    Total Loss: 2260.8494
    MSE Component: 2.2470 (Weighted: 2246.9552)
    NLL Component: 13.8066
    Min Variance: 2.85e-05
    p1=0.251, p2=0.230
--- Iter [965/2000] ---
    Total Loss: 1732.2419
    MSE Component: 1.7161 (Weighted: 1716.0828)
    NLL Component: 16.0714
    Min Variance: 6.76e-06
    p1=0.251, p2=0.230
--- Iter [966/2000] ---
    Total Loss: 1906.2961
    MSE Component: 1.8884 (Weighted: 1888.3818)
    NLL Component: 17.8265
    Min Variance: 2.58e-06
    p1=0.251, p2=0.230
--- Iter [967/2000] ---
    Total Loss: 2303.6055
    MSE Component: 2.2878 (Weighted: 2287.8294)
    NLL Component: 15.6884
    Min Variance: 3.81e-06
    p1=0.251, p2=0.230
--- Iter [968/2000] ---
    Total Loss: 2513.8108
    MSE Component: 2.5056 (Weighted: 2505.5912)
    NLL Component: 8.1320
    Min Variance: 1.23e-05
    p1=0.251, p2=0.229
--- Iter [969/2000] ---
    Total Loss: 2370.2976
    MSE Component: 2.3519 (Weighted: 2351.8684)
    NLL Component: 18.3415

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    Min Variance: 1.43e-05
    p1=0.251, p2=0.229
--- Iter [970/2000] ---
    Total Loss: 1697.0594
    MSE Component: 1.6846 (Weighted: 1684.5775)
    NLL Component: 12.3941
    Min Variance: 1.94e-05
    p1=0.251, p2=0.229

--- Validation at iteration 970 ---
    Average MSE: 239.3381, Average ANEES: 535.3149
-----
--- Iter [971/2000] ---
    Total Loss: 2071.6118
    MSE Component: 2.0569 (Weighted: 2056.8638)
    NLL Component: 14.6604
    Min Variance: 1.60e-05
    p1=0.251, p2=0.229
--- Iter [972/2000] ---
    Total Loss: 2434.1921
    MSE Component: 2.4214 (Weighted: 2421.3841)
    NLL Component: 12.7206
    Min Variance: 1.79e-05
    p1=0.251, p2=0.229
--- Iter [973/2000] ---
    Total Loss: 1686.7249
    MSE Component: 1.6717 (Weighted: 1671.7404)
    NLL Component: 14.8968
    Min Variance: 1.81e-05
    p1=0.251, p2=0.229
--- Iter [974/2000] ---
    Total Loss: 2094.5190
    MSE Component: 2.0774 (Weighted: 2077.3816)
    NLL Component: 17.0497
    Min Variance: 6.83e-06
    p1=0.251, p2=0.229
--- Iter [975/2000] ---
    Total Loss: 2241.8579
    MSE Component: 2.2244 (Weighted: 2224.3764)
    NLL Component: 17.3938
    Min Variance: 2.37e-05
    p1=0.251, p2=0.229
--- Iter [976/2000] ---
    Total Loss: 3140.4229
    MSE Component: 3.1281 (Weighted: 3128.1121)
    NLL Component: 12.2232
    Min Variance: 1.23e-05
    p1=0.251, p2=0.229

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--- Iter [977/2000] ---
Total Loss: 3241.0334
MSE Component: 3.2287 (Weighted: 3228.6625)
NLL Component: 12.2833
Min Variance: 1.38e-05
p1=0.251, p2=0.229
--- Iter [978/2000] ---
Total Loss: 3036.0496
MSE Component: 3.0182 (Weighted: 3018.1844)
NLL Component: 17.7775
Min Variance: 1.56e-05
p1=0.251, p2=0.229
--- Iter [979/2000] ---
Total Loss: 1881.2748
MSE Component: 1.8708 (Weighted: 1870.7781)
NLL Component: 10.4090
Min Variance: 1.40e-05
p1=0.251, p2=0.229
--- Iter [980/2000] ---
Total Loss: 1960.4111
MSE Component: 1.9471 (Weighted: 1947.0950)
NLL Component: 13.2283
Min Variance: 1.48e-05
p1=0.251, p2=0.229

--- Validation at iteration 980 ---
Average MSE: 249.0749, Average ANEES: 661.5446
-----
--- Iter [981/2000] ---
Total Loss: 1882.5131
MSE Component: 1.8641 (Weighted: 1864.0949)
NLL Component: 18.3304
Min Variance: 1.99e-05
p1=0.251, p2=0.229
--- Iter [982/2000] ---
Total Loss: 3037.0291
MSE Component: 3.0225 (Weighted: 3022.4621)
NLL Component: 14.4793
Min Variance: 9.19e-06
p1=0.251, p2=0.229
--- Iter [983/2000] ---
Total Loss: 2023.4280
MSE Component: 2.0099 (Weighted: 2009.9235)
NLL Component: 13.4168
Min Variance: 1.40e-05
p1=0.251, p2=0.229
--- Iter [984/2000] ---
Total Loss: 3149.4062

```

```

MSE Component: 3.1391 (Weighted: 3139.1017)
NLL Component: 10.2169
Min Variance: 1.66e-05
p1=0.251, p2=0.229
--- Iter [985/2000] ---
Total Loss: 2533.6445
MSE Component: 2.5205 (Weighted: 2520.5188)
NLL Component: 13.0382
Min Variance: 6.52e-06
p1=0.251, p2=0.229
--- Iter [986/2000] ---
Total Loss: 2184.6045
MSE Component: 2.1723 (Weighted: 2172.3342)
NLL Component: 12.1827
Min Variance: 2.02e-05
p1=0.251, p2=0.229
--- Iter [987/2000] ---
Total Loss: 2164.9429
MSE Component: 2.1511 (Weighted: 2151.1221)
NLL Component: 13.7332
Min Variance: 1.70e-05
p1=0.251, p2=0.229
--- Iter [988/2000] ---
Total Loss: 1835.7219
MSE Component: 1.8246 (Weighted: 1824.5690)
NLL Component: 11.0652
Min Variance: 5.19e-06
p1=0.251, p2=0.229
--- Iter [989/2000] ---
Total Loss: 2383.2427
MSE Component: 2.3645 (Weighted: 2364.5492)
NLL Component: 18.6059
Min Variance: 1.31e-05
p1=0.251, p2=0.229
--- Iter [990/2000] ---
Total Loss: 3771.7371
MSE Component: 3.7514 (Weighted: 3751.3754)
NLL Component: 20.2739
Min Variance: 1.05e-05
p1=0.251, p2=0.229

--- Validation at iteration 990 ---
Average MSE: 237.1599, Average ANEES: 557.6729
-----
--- Iter [991/2000] ---
Total Loss: 3686.7134
MSE Component: 3.6711 (Weighted: 3671.1071)
NLL Component: 15.5189

```

```

Min Variance: 1.32e-05
p1=0.251, p2=0.229
--- Iter [992/2000] ---
Total Loss: 2961.7400
MSE Component: 2.9471 (Weighted: 2947.0563)
NLL Component: 14.5960
Min Variance: 1.27e-05
p1=0.250, p2=0.229
--- Iter [993/2000] ---
Total Loss: 2434.1079
MSE Component: 2.4208 (Weighted: 2420.8071)
NLL Component: 13.2131
Min Variance: 6.43e-06
p1=0.250, p2=0.229
--- Iter [994/2000] ---
Total Loss: 2434.7192
MSE Component: 2.4221 (Weighted: 2422.1044)
NLL Component: 12.5274
Min Variance: 1.30e-05
p1=0.250, p2=0.229
--- Iter [995/2000] ---
Total Loss: 2248.6653
MSE Component: 2.2290 (Weighted: 2228.9705)
NLL Component: 19.6073
Min Variance: 9.57e-06
p1=0.250, p2=0.229
--- Iter [996/2000] ---
Total Loss: 2059.2524
MSE Component: 2.0417 (Weighted: 2041.6648)
NLL Component: 17.4999
Min Variance: 6.41e-06
p1=0.250, p2=0.229
--- Iter [997/2000] ---
Total Loss: 2421.5166
MSE Component: 2.4066 (Weighted: 2406.6055)
NLL Component: 14.8235
Min Variance: 1.26e-05
p1=0.250, p2=0.229
--- Iter [998/2000] ---
Total Loss: 2415.3989
MSE Component: 2.4000 (Weighted: 2399.9505)
NLL Component: 15.3608
Min Variance: 9.84e-06
p1=0.250, p2=0.229
--- Iter [999/2000] ---
Total Loss: 5149.8672
MSE Component: 5.1390 (Weighted: 5138.9618)
NLL Component: 10.8176

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    Min Variance: 1.43e-05
    p1=0.250, p2=0.229
--- Iter [1000/2000] ---
    Total Loss: 2502.3157
    MSE Component: 2.4862 (Weighted: 2486.1903)
    NLL Component: 16.0377
    Min Variance: 1.25e-05
    p1=0.250, p2=0.229

--- Validation at iteration 1000 ---
    Average MSE: 252.5762, Average ANEES: 460.5830
-----
--- Iter [1001/2000] ---
    Total Loss: 4207.5303
    MSE Component: 4.1971 (Weighted: 4197.1340)
    NLL Component: 10.3088
    Min Variance: 1.20e-05
    p1=0.250, p2=0.229
--- Iter [1002/2000] ---
    Total Loss: 3873.4446
    MSE Component: 3.8621 (Weighted: 3862.0634)
    NLL Component: 11.2935
    Min Variance: 1.69e-05
    p1=0.250, p2=0.229
--- Iter [1003/2000] ---
    Total Loss: 3025.3357
    MSE Component: 3.0100 (Weighted: 3009.9730)
    NLL Component: 15.2750
    Min Variance: 2.05e-05
    p1=0.250, p2=0.229
--- Iter [1004/2000] ---
    Total Loss: 2633.7312
    MSE Component: 2.6181 (Weighted: 2618.1452)
    NLL Component: 15.4982
    Min Variance: 1.28e-05
    p1=0.250, p2=0.229
--- Iter [1005/2000] ---
    Total Loss: 1812.5142
    MSE Component: 1.7998 (Weighted: 1799.7774)
    NLL Component: 12.6490
    Min Variance: 1.03e-05
    p1=0.250, p2=0.229
--- Iter [1006/2000] ---
    Total Loss: 2271.7417
    MSE Component: 2.2579 (Weighted: 2257.8743)
    NLL Component: 13.7797
    Min Variance: 1.21e-05
    p1=0.250, p2=0.229

```



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--- Iter [1007/2000] ---
Total Loss: 2827.2036
MSE Component: 2.8126 (Weighted: 2812.5548)
NLL Component: 14.5611
Min Variance: 1.61e-05
p1=0.250, p2=0.229
--- Iter [1008/2000] ---
Total Loss: 2269.7825
MSE Component: 2.2604 (Weighted: 2260.3765)
NLL Component: 9.3184
Min Variance: 6.26e-06
p1=0.250, p2=0.229
--- Iter [1009/2000] ---
Total Loss: 2473.6365
MSE Component: 2.4631 (Weighted: 2463.0611)
NLL Component: 10.4878
Min Variance: 1.55e-05
p1=0.250, p2=0.229
--- Iter [1010/2000] ---
Total Loss: 2901.7048
MSE Component: 2.8868 (Weighted: 2886.7543)
NLL Component: 14.8628
Min Variance: 9.41e-06
p1=0.250, p2=0.229

--- Validation at iteration 1010 ---
Average MSE: 229.1591, Average ANEES: 527.1625
-----
--- Iter [1011/2000] ---
Total Loss: 3866.3064
MSE Component: 3.8512 (Weighted: 3851.2180)
NLL Component: 15.0007
Min Variance: 1.15e-05
p1=0.250, p2=0.229
--- Iter [1012/2000] ---
Total Loss: 3571.6082
MSE Component: 3.5593 (Weighted: 3559.3150)
NLL Component: 12.2055
Min Variance: 1.11e-05
p1=0.250, p2=0.229
--- Iter [1013/2000] ---
Total Loss: 2198.6411
MSE Component: 2.1800 (Weighted: 2179.9932)
NLL Component: 18.5604
Min Variance: 1.01e-05
p1=0.250, p2=0.229
--- Iter [1014/2000] ---
Total Loss: 2618.7673

```

```

MSE Component: 2.5999 (Weighted: 2599.9436)
NLL Component: 18.7362
Min Variance: 6.63e-06
p1=0.250, p2=0.229
--- Iter [1015/2000] ---
Total Loss: 1931.3263
MSE Component: 1.9178 (Weighted: 1917.7974)
NLL Component: 13.4411
Min Variance: 1.30e-05
p1=0.250, p2=0.229
--- Iter [1016/2000] ---
Total Loss: 2477.3411
MSE Component: 2.4643 (Weighted: 2464.2563)
NLL Component: 12.9970
Min Variance: 1.02e-05
p1=0.250, p2=0.229
--- Iter [1017/2000] ---
Total Loss: 2708.6409
MSE Component: 2.6972 (Weighted: 2697.1641)
NLL Component: 11.3893
Min Variance: 1.54e-05
p1=0.250, p2=0.229
--- Iter [1018/2000] ---
Total Loss: 3154.4897
MSE Component: 3.1416 (Weighted: 3141.5665)
NLL Component: 12.8357
Min Variance: 7.23e-06
p1=0.250, p2=0.229
--- Iter [1019/2000] ---
Total Loss: 1854.5574
MSE Component: 1.8460 (Weighted: 1845.9879)
NLL Component: 8.4819
Min Variance: 1.90e-05
p1=0.250, p2=0.229
--- Iter [1020/2000] ---
Total Loss: 1861.3445
MSE Component: 1.8401 (Weighted: 1840.1316)
NLL Component: 21.1253
Min Variance: 8.74e-06
p1=0.250, p2=0.229

--- Validation at iteration 1020 ---
Average MSE: 242.4492, Average ANEES: 471.9071
-----
--- Iter [1021/2000] ---
Total Loss: 2294.2158
MSE Component: 2.2782 (Weighted: 2278.1835)
NLL Component: 15.9448

```

```

Min Variance: 1.48e-05
p1=0.250, p2=0.229
--- Iter [1022/2000] ---
Total Loss: 2073.2927
MSE Component: 2.0596 (Weighted: 2059.6359)
NLL Component: 13.5691
Min Variance: 6.50e-06
p1=0.250, p2=0.229
--- Iter [1023/2000] ---
Total Loss: 2638.5854
MSE Component: 2.6227 (Weighted: 2622.7067)
NLL Component: 15.7913
Min Variance: 1.24e-05
p1=0.250, p2=0.229
--- Iter [1024/2000] ---
Total Loss: 4216.7227
MSE Component: 4.2033 (Weighted: 4203.3167)
NLL Component: 13.3180
Min Variance: 7.68e-06
p1=0.250, p2=0.229
--- Iter [1025/2000] ---
Total Loss: 4169.9507
MSE Component: 4.1555 (Weighted: 4155.4751)
NLL Component: 14.3879
Min Variance: 1.40e-05
p1=0.250, p2=0.229
--- Iter [1026/2000] ---
Total Loss: 2495.4036
MSE Component: 2.4847 (Weighted: 2484.6511)
NLL Component: 10.6649
Min Variance: 1.68e-05
p1=0.250, p2=0.229
--- Iter [1027/2000] ---
Total Loss: 3814.7178
MSE Component: 3.7958 (Weighted: 3795.8329)
NLL Component: 18.7974
Min Variance: 1.35e-05
p1=0.250, p2=0.229
--- Iter [1028/2000] ---
Total Loss: 5522.8604
MSE Component: 5.5071 (Weighted: 5507.0810)
NLL Component: 15.6913
Min Variance: 1.91e-05
p1=0.250, p2=0.229
--- Iter [1029/2000] ---
Total Loss: 4478.6445
MSE Component: 4.4657 (Weighted: 4465.6906)
NLL Component: 12.8660

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    Min Variance: 8.37e-06
    p1=0.250, p2=0.229
--- Iter [1030/2000] ---
    Total Loss: 2751.5740
    MSE Component: 2.7378 (Weighted: 2737.7667)
    NLL Component: 13.7195
    Min Variance: 1.63e-05
    p1=0.250, p2=0.229

--- Validation at iteration 1030 ---
    Average MSE: 238.8722, Average ANEES: 624.6091
-----
--- Iter [1031/2000] ---
    Total Loss: 3391.9500
    MSE Component: 3.3795 (Weighted: 3379.5402)
    NLL Component: 12.3220
    Min Variance: 1.20e-05
    p1=0.250, p2=0.229
--- Iter [1032/2000] ---
    Total Loss: 1598.2830
    MSE Component: 1.5822 (Weighted: 1582.1996)
    NLL Component: 15.9958
    Min Variance: 9.30e-06
    p1=0.250, p2=0.229
--- Iter [1033/2000] ---
    Total Loss: 4320.9004
    MSE Component: 4.3106 (Weighted: 4310.6198)
    NLL Component: 10.1928
    Min Variance: 1.75e-05
    p1=0.250, p2=0.229
--- Iter [1034/2000] ---
    Total Loss: 4651.2368
    MSE Component: 4.6373 (Weighted: 4637.3181)
    NLL Component: 13.8306
    Min Variance: 5.58e-06
    p1=0.250, p2=0.229
--- Iter [1035/2000] ---
    Total Loss: 7296.4585
    MSE Component: 7.2810 (Weighted: 7281.0130)
    NLL Component: 15.3575
    Min Variance: 1.03e-05
    p1=0.250, p2=0.229
--- Iter [1036/2000] ---
    Total Loss: 4098.1919
    MSE Component: 4.0823 (Weighted: 4082.2873)
    NLL Component: 15.8167
    Min Variance: 8.22e-06
    p1=0.250, p2=0.229

```

```

--- Iter [1037/2000] ---
  Total Loss: 4021.4458
  MSE Component: 4.0089 (Weighted: 4008.8921)
  NLL Component: 12.4660
  Min Variance: 5.13e-06
  p1=0.250, p2=0.229
--- Iter [1038/2000] ---
  Total Loss: 6274.5645
  MSE Component: 6.2602 (Weighted: 6260.1647)
  NLL Component: 14.3119
  Min Variance: 1.94e-05
  p1=0.250, p2=0.229
--- Iter [1039/2000] ---
  Total Loss: 4354.3027
  MSE Component: 4.3439 (Weighted: 4343.9279)
  NLL Component: 10.2869
  Min Variance: 2.46e-05
  p1=0.250, p2=0.229
--- Iter [1040/2000] ---
  Total Loss: 4106.2725
  MSE Component: 4.0914 (Weighted: 4091.4221)
  NLL Component: 14.7623
  Min Variance: 7.03e-06
  p1=0.250, p2=0.229

--- Validation at iteration 1040 ---
  Average MSE: 230.6342, Average ANEES: 567.6390
-----
--- Iter [1041/2000] ---
  Total Loss: 3207.5149
  MSE Component: 3.1872 (Weighted: 3187.1841)
  NLL Component: 20.2433
  Min Variance: 1.67e-05
  p1=0.250, p2=0.229
--- Iter [1042/2000] ---
  Total Loss: 3235.3284
  MSE Component: 3.2237 (Weighted: 3223.7103)
  NLL Component: 11.5306
  Min Variance: 1.60e-05
  p1=0.250, p2=0.229
--- Iter [1043/2000] ---
  Total Loss: 2875.8984
  MSE Component: 2.8615 (Weighted: 2861.4964)
  NLL Component: 14.3145
  Min Variance: 1.90e-05
  p1=0.250, p2=0.229
--- Iter [1044/2000] ---
  Total Loss: 4237.3042

```

```

MSE Component: 4.2214 (Weighted: 4221.4165)
NLL Component: 15.7996
Min Variance: 2.10e-05
p1=0.250, p2=0.229
--- Iter [1045/2000] ---
Total Loss: 4755.3213
MSE Component: 4.7370 (Weighted: 4737.0186)
NLL Component: 18.2149
Min Variance: 1.70e-05
p1=0.250, p2=0.229
--- Iter [1046/2000] ---
Total Loss: 6692.8247
MSE Component: 6.6785 (Weighted: 6678.4978)
NLL Component: 14.2392
Min Variance: 1.41e-05
p1=0.250, p2=0.229
--- Iter [1047/2000] ---
Total Loss: 7429.3096
MSE Component: 7.4150 (Weighted: 7415.0209)
NLL Component: 14.2008
Min Variance: 1.24e-05
p1=0.250, p2=0.229
--- Iter [1048/2000] ---
Total Loss: 7780.3896
MSE Component: 7.7635 (Weighted: 7763.4602)
NLL Component: 16.8417
Min Variance: 1.32e-05
p1=0.250, p2=0.229
--- Iter [1049/2000] ---
Total Loss: 3928.7046
MSE Component: 3.9149 (Weighted: 3914.9365)
NLL Component: 13.6803
Min Variance: 1.39e-05
p1=0.250, p2=0.229
--- Iter [1050/2000] ---
Total Loss: 3641.5420
MSE Component: 3.6160 (Weighted: 3615.9770)
NLL Component: 25.4772
Min Variance: 8.18e-06
p1=0.250, p2=0.229

--- Validation at iteration 1050 ---
Average MSE: 255.8163, Average ANEES: 539.5137
-----
--- Iter [1051/2000] ---
Total Loss: 4006.1914
MSE Component: 3.9871 (Weighted: 3987.1016)
NLL Component: 19.0021

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Min Variance: 9.72e-06
p1=0.250, p2=0.229
--- Iter [1052/2000] ---
Total Loss: 3697.7639
MSE Component: 3.6851 (Weighted: 3685.0903)
NLL Component: 12.5860
Min Variance: 1.02e-05
p1=0.250, p2=0.229
--- Iter [1053/2000] ---
Total Loss: 3763.7954
MSE Component: 3.7500 (Weighted: 3749.9752)
NLL Component: 13.7328
Min Variance: 1.22e-05
p1=0.250, p2=0.229
--- Iter [1054/2000] ---
Total Loss: 3171.4087
MSE Component: 3.1599 (Weighted: 3159.9221)
NLL Component: 11.3989
Min Variance: 1.05e-05
p1=0.250, p2=0.229
--- Iter [1055/2000] ---
Total Loss: 3693.5786
MSE Component: 3.6817 (Weighted: 3681.6630)
NLL Component: 11.8279
Min Variance: 1.03e-05
p1=0.250, p2=0.229
--- Iter [1056/2000] ---
Total Loss: 5935.4526
MSE Component: 5.9237 (Weighted: 5923.6975)
NLL Component: 11.6676
Min Variance: 8.07e-06
p1=0.250, p2=0.229
--- Iter [1057/2000] ---
Total Loss: 3979.2473
MSE Component: 3.9693 (Weighted: 3969.3277)
NLL Component: 9.8320
Min Variance: 1.58e-05
p1=0.250, p2=0.229
--- Iter [1058/2000] ---
Total Loss: 5978.6221
MSE Component: 5.9643 (Weighted: 5964.3335)
NLL Component: 14.2005
Min Variance: 1.24e-05
p1=0.250, p2=0.229
--- Iter [1059/2000] ---
Total Loss: 3973.4199
MSE Component: 3.9620 (Weighted: 3961.9594)
NLL Component: 11.3727

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Min Variance: 7.17e-06
p1=0.250, p2=0.229
--- Iter [1060/2000] ---
Total Loss: 3771.6914
MSE Component: 3.7602 (Weighted: 3760.1781)
NLL Component: 11.4257
Min Variance: 2.25e-05
p1=0.250, p2=0.229

--- Validation at iteration 1060 ---
Average MSE: 277.7622, Average ANEES: 536.5517
-----
--- Iter [1061/2000] ---
Total Loss: 4943.7124
MSE Component: 4.9304 (Weighted: 4930.4228)
NLL Component: 13.2018
Min Variance: 2.83e-05
p1=0.250, p2=0.229
--- Iter [1062/2000] ---
Total Loss: 1643.6476
MSE Component: 1.6322 (Weighted: 1632.1781)
NLL Component: 11.3819
Min Variance: 2.20e-05
p1=0.250, p2=0.229
--- Iter [1063/2000] ---
Total Loss: 2246.1689
MSE Component: 2.2311 (Weighted: 2231.0524)
NLL Component: 15.0288
Min Variance: 1.25e-05
p1=0.250, p2=0.229
--- Iter [1064/2000] ---
Total Loss: 2341.0803
MSE Component: 2.3253 (Weighted: 2325.2842)
NLL Component: 15.7086
Min Variance: 1.76e-05
p1=0.250, p2=0.229
--- Iter [1065/2000] ---
Total Loss: 2854.1709
MSE Component: 2.8401 (Weighted: 2840.0822)
NLL Component: 14.0011
Min Variance: 1.62e-05
p1=0.250, p2=0.229
--- Iter [1066/2000] ---
Total Loss: 3457.8296
MSE Component: 3.4446 (Weighted: 3444.6423)
NLL Component: 13.0997
Min Variance: 1.49e-05
p1=0.250, p2=0.229

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--- Iter [1067/2000] ---
Total Loss: 4610.1396
MSE Component: 4.5956 (Weighted: 4595.5591)
NLL Component: 14.4927
Min Variance: 1.68e-05
p1=0.250, p2=0.229
--- Iter [1068/2000] ---
Total Loss: 2372.7168
MSE Component: 2.3526 (Weighted: 2352.6185)
NLL Component: 20.0108
Min Variance: 9.32e-06
p1=0.250, p2=0.229
--- Iter [1069/2000] ---
Total Loss: 4460.5420
MSE Component: 4.4458 (Weighted: 4445.7698)
NLL Component: 14.6840
Min Variance: 9.02e-06
p1=0.250, p2=0.229
--- Iter [1070/2000] ---
Total Loss: 2875.9312
MSE Component: 2.8590 (Weighted: 2859.0398)
NLL Component: 16.8038
Min Variance: 3.28e-06
p1=0.250, p2=0.229

--- Validation at iteration 1070 ---
Average MSE: 231.7465, Average ANEES: 459.1877
-----
--- Iter [1071/2000] ---
Total Loss: 4162.8687
MSE Component: 4.1477 (Weighted: 4147.7447)
NLL Component: 15.0360
Min Variance: 1.25e-05
p1=0.250, p2=0.229
--- Iter [1072/2000] ---
Total Loss: 2365.8574
MSE Component: 2.3523 (Weighted: 2352.3195)
NLL Component: 13.4502
Min Variance: 1.19e-05
p1=0.250, p2=0.229
--- Iter [1073/2000] ---
Total Loss: 2347.8142
MSE Component: 2.3360 (Weighted: 2335.9756)
NLL Component: 11.7511
Min Variance: 2.56e-05
p1=0.250, p2=0.229
--- Iter [1074/2000] ---
Total Loss: 1802.3201

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MSE Component: 1.7868 (Weighted: 1786.8146)
NLL Component: 15.4178
Min Variance: 1.24e-05
p1=0.250, p2=0.229
--- Iter [1075/2000] ---
Total Loss: 2749.6853
MSE Component: 2.7326 (Weighted: 2732.5819)
NLL Component: 17.0160
Min Variance: 1.14e-05
p1=0.250, p2=0.229
--- Iter [1076/2000] ---
Total Loss: 3699.9766
MSE Component: 3.6903 (Weighted: 3690.2652)
NLL Component: 9.6238
Min Variance: 1.74e-05
p1=0.250, p2=0.229
--- Iter [1077/2000] ---
Total Loss: 2621.2271
MSE Component: 2.6073 (Weighted: 2607.3415)
NLL Component: 13.7979
Min Variance: 1.25e-05
p1=0.250, p2=0.229
--- Iter [1078/2000] ---
Total Loss: 4451.5435
MSE Component: 4.4376 (Weighted: 4437.5572)
NLL Component: 13.8985
Min Variance: 7.84e-06
p1=0.250, p2=0.229
--- Iter [1079/2000] ---
Total Loss: 2373.5090
MSE Component: 2.3620 (Weighted: 2361.9854)
NLL Component: 11.4360
Min Variance: 1.50e-05
p1=0.250, p2=0.229
--- Iter [1080/2000] ---
Total Loss: 2799.6287
MSE Component: 2.7834 (Weighted: 2783.3962)
NLL Component: 16.1448
Min Variance: 9.96e-06
p1=0.250, p2=0.229

--- Validation at iteration 1080 ---
Average MSE: 258.6591, Average ANEES: 485.8675
-----
--- Iter [1081/2000] ---
Total Loss: 2717.7537
MSE Component: 2.7042 (Weighted: 2704.2024)
NLL Component: 13.4637

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Min Variance: 1.82e-05
p1=0.250, p2=0.229
--- Iter [1082/2000] ---
Total Loss: 2612.1355
MSE Component: 2.6030 (Weighted: 2602.9761)
NLL Component: 9.0717
Min Variance: 3.07e-05
p1=0.249, p2=0.229
--- Iter [1083/2000] ---
Total Loss: 2301.0063
MSE Component: 2.2870 (Weighted: 2286.9589)
NLL Component: 13.9598
Min Variance: 6.45e-06
p1=0.249, p2=0.229
--- Iter [1084/2000] ---
Total Loss: 2638.9575
MSE Component: 2.6256 (Weighted: 2625.5701)
NLL Component: 13.2999
Min Variance: 2.66e-05
p1=0.249, p2=0.229
--- Iter [1085/2000] ---
Total Loss: 3692.2437
MSE Component: 3.6688 (Weighted: 3668.7908)
NLL Component: 23.3652
Min Variance: 1.98e-05
p1=0.249, p2=0.229
--- Iter [1086/2000] ---
Total Loss: 2947.2092
MSE Component: 2.9343 (Weighted: 2934.2587)
NLL Component: 12.8629
Min Variance: 1.27e-05
p1=0.249, p2=0.229
--- Iter [1087/2000] ---
Total Loss: 3586.0269
MSE Component: 3.5730 (Weighted: 3573.0488)
NLL Component: 12.8903
Min Variance: 2.14e-05
p1=0.249, p2=0.229
--- Iter [1088/2000] ---
Total Loss: 3142.7822
MSE Component: 3.1238 (Weighted: 3123.8017)
NLL Component: 18.8929
Min Variance: 8.53e-06
p1=0.249, p2=0.229
--- Iter [1089/2000] ---
Total Loss: 2715.6658
MSE Component: 2.6994 (Weighted: 2699.3530)
NLL Component: 16.2252

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    Min Variance: 5.75e-06
    p1=0.249, p2=0.229
--- Iter [1090/2000] ---
    Total Loss: 2686.0046
    MSE Component: 2.6695 (Weighted: 2669.5352)
    NLL Component: 16.3819
    Min Variance: 9.34e-06
    p1=0.249, p2=0.229

--- Validation at iteration 1090 ---
    Average MSE: 235.4142, Average ANEES: 574.6417
-----
--- Iter [1091/2000] ---
    Total Loss: 2337.4065
    MSE Component: 2.3202 (Weighted: 2320.2209)
    NLL Component: 17.0979
    Min Variance: 1.41e-05
    p1=0.249, p2=0.229
--- Iter [1092/2000] ---
    Total Loss: 2179.6980
    MSE Component: 2.1689 (Weighted: 2168.9377)
    NLL Component: 10.6727
    Min Variance: 1.18e-05
    p1=0.249, p2=0.229
--- Iter [1093/2000] ---
    Total Loss: 1967.9883
    MSE Component: 1.9568 (Weighted: 1956.8113)
    NLL Component: 11.0894
    Min Variance: 1.22e-05
    p1=0.249, p2=0.229
--- Iter [1094/2000] ---
    Total Loss: 2359.4526
    MSE Component: 2.3467 (Weighted: 2346.7216)
    NLL Component: 12.6433
    Min Variance: 1.35e-05
    p1=0.249, p2=0.229
--- Iter [1095/2000] ---
    Total Loss: 2644.9011
    MSE Component: 2.6349 (Weighted: 2634.8977)
    NLL Component: 9.9157
    Min Variance: 1.83e-05
    p1=0.249, p2=0.229
--- Iter [1096/2000] ---
    Total Loss: 3241.5798
    MSE Component: 3.2284 (Weighted: 3228.4148)
    NLL Component: 13.0774
    Min Variance: 2.02e-05
    p1=0.249, p2=0.229

```

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--- Iter [1097/2000] ---
    Total Loss: 4092.0015
    MSE Component: 4.0822 (Weighted: 4082.1733)
    NLL Component: 9.7405
    Min Variance: 2.72e-05
    p1=0.249, p2=0.229
--- Iter [1098/2000] ---
    Total Loss: 1969.6245
    MSE Component: 1.9489 (Weighted: 1948.8803)
    NLL Component: 20.6566
    Min Variance: 9.17e-06
    p1=0.249, p2=0.229
--- Iter [1099/2000] ---
    Total Loss: 2138.8865
    MSE Component: 2.1264 (Weighted: 2126.3859)
    NLL Component: 12.4128
    Min Variance: 5.37e-06
    p1=0.249, p2=0.229
--- Iter [1100/2000] ---
    Total Loss: 1955.5383
    MSE Component: 1.9372 (Weighted: 1937.1792)
    NLL Component: 18.2714
    Min Variance: 2.55e-05
    p1=0.249, p2=0.229

--- Validation at iteration 1100 ---
    Average MSE: 236.3828, Average ANEES: 538.4022
-----
--- Iter [1101/2000] ---
    Total Loss: 2144.1155
    MSE Component: 2.1348 (Weighted: 2134.7945)
    NLL Component: 9.2334
    Min Variance: 3.04e-05
    p1=0.249, p2=0.229
--- Iter [1102/2000] ---
    Total Loss: 2312.0625
    MSE Component: 2.2989 (Weighted: 2298.9304)
    NLL Component: 13.0445
    Min Variance: 5.79e-06
    p1=0.249, p2=0.229
--- Iter [1103/2000] ---
    Total Loss: 2770.6702
    MSE Component: 2.7550 (Weighted: 2754.9891)
    NLL Component: 15.5932
    Min Variance: 7.69e-06
    p1=0.249, p2=0.229
--- Iter [1104/2000] ---
    Total Loss: 1809.9657

```

```

MSE Component: 1.8008 (Weighted: 1800.7960)
NLL Component: 9.0820
Min Variance: 2.15e-05
p1=0.249, p2=0.229
--- Iter [1105/2000] ---
Total Loss: 2773.8938
MSE Component: 2.7591 (Weighted: 2759.0778)
NLL Component: 14.7282
Min Variance: 5.12e-06
p1=0.249, p2=0.229
--- Iter [1106/2000] ---
Total Loss: 2206.3447
MSE Component: 2.1950 (Weighted: 2194.9742)
NLL Component: 11.2830
Min Variance: 1.51e-05
p1=0.249, p2=0.229
--- Iter [1107/2000] ---
Total Loss: 1873.2134
MSE Component: 1.8636 (Weighted: 1863.5712)
NLL Component: 9.5546
Min Variance: 6.86e-06
p1=0.249, p2=0.229
--- Iter [1108/2000] ---
Total Loss: 1526.2638
MSE Component: 1.5090 (Weighted: 1508.9978)
NLL Component: 17.1784
Min Variance: 3.78e-06
p1=0.249, p2=0.229
--- Iter [1109/2000] ---
Total Loss: 2842.1863
MSE Component: 2.8294 (Weighted: 2829.4098)
NLL Component: 12.6887
Min Variance: 9.29e-06
p1=0.249, p2=0.229
--- Iter [1110/2000] ---
Total Loss: 1850.1323
MSE Component: 1.8437 (Weighted: 1843.7264)
NLL Component: 6.3182
Min Variance: 1.82e-05
p1=0.249, p2=0.229

--- Validation at iteration 1110 ---
Average MSE: 255.9454, Average ANEES: 406.4060
-----
--- Iter [1111/2000] ---
Total Loss: 2102.6836
MSE Component: 2.0917 (Weighted: 2091.7115)
NLL Component: 10.8846

```

```

Min Variance: 1.73e-05
p1=0.249, p2=0.229
--- Iter [1112/2000] ---
Total Loss: 1649.5559
MSE Component: 1.6374 (Weighted: 1637.3805)
NLL Component: 12.0877
Min Variance: 1.61e-05
p1=0.249, p2=0.229
--- Iter [1113/2000] ---
Total Loss: 2150.2168
MSE Component: 2.1374 (Weighted: 2137.3832)
NLL Component: 12.7458
Min Variance: 1.40e-05
p1=0.249, p2=0.229
--- Iter [1114/2000] ---
Total Loss: 1923.7440
MSE Component: 1.9114 (Weighted: 1911.4196)
NLL Component: 12.2367
Min Variance: 1.98e-05
p1=0.249, p2=0.229
--- Iter [1115/2000] ---
Total Loss: 1522.8334
MSE Component: 1.5112 (Weighted: 1511.2411)
NLL Component: 11.5046
Min Variance: 7.98e-06
p1=0.249, p2=0.229
--- Iter [1116/2000] ---
Total Loss: 2305.9695
MSE Component: 2.2910 (Weighted: 2290.9787)
NLL Component: 14.9031
Min Variance: 2.21e-05
p1=0.249, p2=0.229
--- Iter [1117/2000] ---
Total Loss: 2574.4004
MSE Component: 2.5640 (Weighted: 2564.0335)
NLL Component: 10.2793
Min Variance: 1.63e-05
p1=0.249, p2=0.229
--- Iter [1118/2000] ---
Total Loss: 2537.1985
MSE Component: 2.5217 (Weighted: 2521.6753)
NLL Component: 15.4356
Min Variance: 1.63e-05
p1=0.249, p2=0.229
--- Iter [1119/2000] ---
Total Loss: 2374.4331
MSE Component: 2.3639 (Weighted: 2363.9109)
NLL Component: 10.4345

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    Min Variance: 1.27e-05
    p1=0.249, p2=0.229
--- Iter [1120/2000] ---
    Total Loss: 1835.3845
    MSE Component: 1.8244 (Weighted: 1824.4339)
    NLL Component: 10.8630
    Min Variance: 1.39e-05
    p1=0.249, p2=0.229

--- Validation at iteration 1120 ---
    Average MSE: 241.1906, Average ANEES: 502.6706
-----
--- Iter [1121/2000] ---
    Total Loss: 1895.5765
    MSE Component: 1.8805 (Weighted: 1880.5370)
    NLL Component: 14.9519
    Min Variance: 2.05e-05
    p1=0.249, p2=0.229
--- Iter [1122/2000] ---
    Total Loss: 1831.5432
    MSE Component: 1.8195 (Weighted: 1819.4770)
    NLL Component: 11.9786
    Min Variance: 1.63e-05
    p1=0.249, p2=0.229
--- Iter [1123/2000] ---
    Total Loss: 1923.4248
    MSE Component: 1.9083 (Weighted: 1908.2664)
    NLL Component: 15.0707
    Min Variance: 7.15e-06
    p1=0.249, p2=0.229
--- Iter [1124/2000] ---
    Total Loss: 2922.1997
    MSE Component: 2.9109 (Weighted: 2910.8500)
    NLL Component: 11.2621
    Min Variance: 1.15e-05
    p1=0.249, p2=0.229
--- Iter [1125/2000] ---
    Total Loss: 2149.3677
    MSE Component: 2.1338 (Weighted: 2133.8348)
    NLL Component: 15.4450
    Min Variance: 1.69e-05
    p1=0.249, p2=0.229
--- Iter [1126/2000] ---
    Total Loss: 2269.7993
    MSE Component: 2.2594 (Weighted: 2259.4311)
    NLL Component: 10.2805
    Min Variance: 1.91e-05
    p1=0.249, p2=0.229

```



```

--- Iter [1127/2000] ---
Total Loss: 1687.2327
MSE Component: 1.6778 (Weighted: 1677.7546)
NLL Component: 9.3903
Min Variance: 2.13e-05
p1=0.249, p2=0.229
--- Iter [1128/2000] ---
Total Loss: 1670.2946
MSE Component: 1.6607 (Weighted: 1660.6562)
NLL Component: 9.5506
Min Variance: 2.28e-05
p1=0.249, p2=0.229
--- Iter [1129/2000] ---
Total Loss: 2154.1985
MSE Component: 2.1457 (Weighted: 2145.6840)
NLL Component: 8.4266
Min Variance: 1.22e-05
p1=0.249, p2=0.229
--- Iter [1130/2000] ---
Total Loss: 1884.2944
MSE Component: 1.8709 (Weighted: 1870.9025)
NLL Component: 13.3042
Min Variance: 1.81e-05
p1=0.249, p2=0.229

--- Validation at iteration 1130 ---
Average MSE: 253.4283, Average ANEES: 429.8016
-----
--- Iter [1131/2000] ---
Total Loss: 2063.1570
MSE Component: 2.0483 (Weighted: 2048.3220)
NLL Component: 14.7473
Min Variance: 1.68e-05
p1=0.249, p2=0.229
--- Iter [1132/2000] ---
Total Loss: 1852.9503
MSE Component: 1.8409 (Weighted: 1840.8556)
NLL Component: 12.0071
Min Variance: 8.03e-06
p1=0.249, p2=0.229
--- Iter [1133/2000] ---
Total Loss: 1937.8729
MSE Component: 1.9280 (Weighted: 1928.0477)
NLL Component: 9.7376
Min Variance: 2.08e-05
p1=0.249, p2=0.229
--- Iter [1134/2000] ---
Total Loss: 1624.6018

```

```

MSE Component: 1.6106 (Weighted: 1610.6156)
NLL Component: 13.8986
Min Variance: 2.33e-05
p1=0.249, p2=0.229
--- Iter [1135/2000] ---
Total Loss: 1847.8890
MSE Component: 1.8385 (Weighted: 1838.5408)
NLL Component: 9.2606
Min Variance: 3.20e-06
p1=0.249, p2=0.229
--- Iter [1136/2000] ---
Total Loss: 1680.1271
MSE Component: 1.6690 (Weighted: 1668.9820)
NLL Component: 11.0573
Min Variance: 1.16e-05
p1=0.249, p2=0.229
--- Iter [1137/2000] ---
Total Loss: 1702.4794
MSE Component: 1.6884 (Weighted: 1688.4061)
NLL Component: 13.9856
Min Variance: 1.25e-05
p1=0.249, p2=0.229
--- Iter [1138/2000] ---
Total Loss: 2010.9973
MSE Component: 2.0018 (Weighted: 2001.8120)
NLL Component: 9.0977
Min Variance: 1.85e-05
p1=0.249, p2=0.229
--- Iter [1139/2000] ---
Total Loss: 1982.2651
MSE Component: 1.9713 (Weighted: 1971.3483)
NLL Component: 10.8292
Min Variance: 2.43e-05
p1=0.249, p2=0.229
--- Iter [1140/2000] ---
Total Loss: 1859.9695
MSE Component: 1.8436 (Weighted: 1843.5854)
NLL Component: 16.2965
Min Variance: 1.85e-05
p1=0.249, p2=0.229

--- Validation at iteration 1140 ---
Average MSE: 234.5253, Average ANEES: 467.4264
-----
--- Iter [1141/2000] ---
Total Loss: 1552.8666
MSE Component: 1.5439 (Weighted: 1543.9291)
NLL Component: 8.8499

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```

Min Variance: 1.38e-05
p1=0.249, p2=0.229
--- Iter [1142/2000] ---
Total Loss: 2164.5525
MSE Component: 2.1510 (Weighted: 2150.9669)
NLL Component: 13.4980
Min Variance: 9.44e-06
p1=0.249, p2=0.229
--- Iter [1143/2000] ---
Total Loss: 1992.1517
MSE Component: 1.9771 (Weighted: 1977.1408)
NLL Component: 14.9233
Min Variance: 1.21e-05
p1=0.249, p2=0.229
--- Iter [1144/2000] ---
Total Loss: 1878.4584
MSE Component: 1.8662 (Weighted: 1866.1853)
NLL Component: 12.1855
Min Variance: 1.62e-05
p1=0.249, p2=0.229
--- Iter [1145/2000] ---
Total Loss: 1840.9382
MSE Component: 1.8306 (Weighted: 1830.6153)
NLL Component: 10.2354
Min Variance: 1.11e-05
p1=0.249, p2=0.228
--- Iter [1146/2000] ---
Total Loss: 1763.8138
MSE Component: 1.7512 (Weighted: 1751.1892)
NLL Component: 12.5370
Min Variance: 1.03e-05
p1=0.249, p2=0.228
--- Iter [1147/2000] ---
Total Loss: 1867.3312
MSE Component: 1.8566 (Weighted: 1856.6499)
NLL Component: 10.5937
Min Variance: 9.25e-06
p1=0.249, p2=0.228
--- Iter [1148/2000] ---
Total Loss: 1881.8749
MSE Component: 1.8665 (Weighted: 1866.5138)
NLL Component: 15.2734
Min Variance: 1.72e-05
p1=0.249, p2=0.228
--- Iter [1149/2000] ---
Total Loss: 1513.4647
MSE Component: 1.5021 (Weighted: 1502.0721)
NLL Component: 11.3049

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    Min Variance: 9.50e-06
    p1=0.249, p2=0.228
--- Iter [1150/2000] ---
    Total Loss: 1253.7262
    MSE Component: 1.2413 (Weighted: 1241.2511)
    NLL Component: 12.3874
    Min Variance: 1.94e-05
    p1=0.249, p2=0.228

--- Validation at iteration 1150 ---
    Average MSE: 246.3703, Average ANEES: 435.1221
-----
--- Iter [1151/2000] ---
    Total Loss: 1640.5525
    MSE Component: 1.6308 (Weighted: 1630.8157)
    NLL Component: 9.6490
    Min Variance: 1.11e-05
    p1=0.249, p2=0.228
--- Iter [1152/2000] ---
    Total Loss: 1568.1641
    MSE Component: 1.5551 (Weighted: 1555.0979)
    NLL Component: 12.9785
    Min Variance: 2.30e-05
    p1=0.249, p2=0.228
--- Iter [1153/2000] ---
    Total Loss: 1581.2190
    MSE Component: 1.5716 (Weighted: 1571.5563)
    NLL Component: 9.5751
    Min Variance: 1.95e-05
    p1=0.249, p2=0.228
--- Iter [1154/2000] ---
    Total Loss: 1841.3839
    MSE Component: 1.8293 (Weighted: 1829.3347)
    NLL Component: 11.9615
    Min Variance: 2.46e-05
    p1=0.249, p2=0.228
--- Iter [1155/2000] ---
    Total Loss: 2135.2153
    MSE Component: 2.1243 (Weighted: 2124.3422)
    NLL Component: 10.7854
    Min Variance: 1.38e-05
    p1=0.249, p2=0.228
--- Iter [1156/2000] ---
    Total Loss: 1599.2488
    MSE Component: 1.5880 (Weighted: 1587.9949)
    NLL Component: 11.1663
    Min Variance: 1.02e-05
    p1=0.249, p2=0.228

```

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--- Iter [1157/2000] ---
Total Loss: 1770.8860
MSE Component: 1.7595 (Weighted: 1759.5210)
NLL Component: 11.2774
Min Variance: 2.42e-05
p1=0.249, p2=0.228
--- Iter [1158/2000] ---
Total Loss: 1813.3285
MSE Component: 1.8020 (Weighted: 1802.0488)
NLL Component: 11.1920
Min Variance: 1.14e-05
p1=0.249, p2=0.228
--- Iter [1159/2000] ---
Total Loss: 1891.5146
MSE Component: 1.8789 (Weighted: 1878.8698)
NLL Component: 12.5573
Min Variance: 1.09e-05
p1=0.249, p2=0.228
--- Iter [1160/2000] ---
Total Loss: 1749.4340
MSE Component: 1.7419 (Weighted: 1741.9209)
NLL Component: 7.4254
Min Variance: 1.13e-05
p1=0.249, p2=0.228

--- Validation at iteration 1160 ---
Average MSE: 252.2712, Average ANEES: 430.7728
-----
--- Iter [1161/2000] ---
Total Loss: 1936.9949
MSE Component: 1.9224 (Weighted: 1922.3725)
NLL Component: 14.5348
Min Variance: 8.99e-06
p1=0.249, p2=0.228
--- Iter [1162/2000] ---
Total Loss: 1579.4620
MSE Component: 1.5690 (Weighted: 1568.9870)
NLL Component: 10.3873
Min Variance: 2.17e-05
p1=0.249, p2=0.228
--- Iter [1163/2000] ---
Total Loss: 1787.1326
MSE Component: 1.7750 (Weighted: 1775.0269)
NLL Component: 12.0180
Min Variance: 1.85e-05
p1=0.248, p2=0.228
--- Iter [1164/2000] ---
Total Loss: 1430.3458

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MSE Component: 1.4152 (Weighted: 1415.2261)
NLL Component: 15.0320
Min Variance: 4.34e-06
p1=0.248, p2=0.228
--- Iter [1165/2000] ---
Total Loss: 1335.8832
MSE Component: 1.3244 (Weighted: 1324.3805)
NLL Component: 11.4151
Min Variance: 9.60e-06
p1=0.248, p2=0.228
--- Iter [1166/2000] ---
Total Loss: 1648.5709
MSE Component: 1.6406 (Weighted: 1640.6270)
NLL Component: 7.8561
Min Variance: 1.53e-05
p1=0.248, p2=0.228
--- Iter [1167/2000] ---
Total Loss: 1722.5140
MSE Component: 1.7097 (Weighted: 1709.7102)
NLL Component: 12.7162
Min Variance: 1.23e-05
p1=0.248, p2=0.228
--- Iter [1168/2000] ---
Total Loss: 1815.3644
MSE Component: 1.8046 (Weighted: 1804.5753)
NLL Component: 10.7014
Min Variance: 1.32e-05
p1=0.248, p2=0.228
--- Iter [1169/2000] ---
Total Loss: 1368.8638
MSE Component: 1.3550 (Weighted: 1355.0336)
NLL Component: 13.7424
Min Variance: 8.26e-06
p1=0.248, p2=0.228
--- Iter [1170/2000] ---
Total Loss: 1983.9688
MSE Component: 1.9743 (Weighted: 1974.2846)
NLL Component: 9.5964
Min Variance: 2.02e-05
p1=0.248, p2=0.228

--- Validation at iteration 1170 ---
Average MSE: 260.2808, Average ANEES: 566.4099
-----
--- Iter [1171/2000] ---
Total Loss: 1852.7803
MSE Component: 1.8399 (Weighted: 1839.8534)
NLL Component: 12.8392

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Min Variance: 1.05e-05
p1=0.248, p2=0.228
--- Iter [1172/2000] ---
Total Loss: 2056.7961
MSE Component: 2.0470 (Weighted: 2047.0412)
NLL Component: 9.6674
Min Variance: 9.32e-06
p1=0.248, p2=0.228
--- Iter [1173/2000] ---
Total Loss: 1901.7860
MSE Component: 1.8889 (Weighted: 1888.8956)
NLL Component: 12.8027
Min Variance: 5.15e-06
p1=0.248, p2=0.228
--- Iter [1174/2000] ---
Total Loss: 1860.5375
MSE Component: 1.8511 (Weighted: 1851.0860)
NLL Component: 9.3637
Min Variance: 1.81e-05
p1=0.248, p2=0.228
--- Iter [1175/2000] ---
Total Loss: 1561.1138
MSE Component: 1.5515 (Weighted: 1551.4567)
NLL Component: 9.5695
Min Variance: 2.33e-05
p1=0.248, p2=0.228
--- Iter [1176/2000] ---
Total Loss: 1473.2302
MSE Component: 1.4634 (Weighted: 1463.3515)
NLL Component: 9.7911
Min Variance: 1.45e-05
p1=0.248, p2=0.228
--- Iter [1177/2000] ---
Total Loss: 1796.9235
MSE Component: 1.7854 (Weighted: 1785.4053)
NLL Component: 11.4306
Min Variance: 1.42e-05
p1=0.248, p2=0.228
--- Iter [1178/2000] ---
Total Loss: 2345.8586
MSE Component: 2.3358 (Weighted: 2335.7971)
NLL Component: 9.9740
Min Variance: 5.84e-06
p1=0.248, p2=0.228
--- Iter [1179/2000] ---
Total Loss: 1945.0573
MSE Component: 1.9348 (Weighted: 1934.7587)
NLL Component: 10.2110

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    Min Variance: 1.73e-05
    p1=0.248, p2=0.228
--- Iter [1180/2000] ---
    Total Loss: 1996.5220
    MSE Component: 1.9877 (Weighted: 1987.7431)
    NLL Component: 8.6912
    Min Variance: 1.33e-05
    p1=0.248, p2=0.228

--- Validation at iteration 1180 ---
    Average MSE: 254.2680, Average ANEES: 478.2787
-----
--- Iter [1181/2000] ---
    Total Loss: 2100.8540
    MSE Component: 2.0893 (Weighted: 2089.3304)
    NLL Component: 11.4361
    Min Variance: 1.56e-05
    p1=0.248, p2=0.228
--- Iter [1182/2000] ---
    Total Loss: 1808.2363
    MSE Component: 1.7990 (Weighted: 1799.0044)
    NLL Component: 9.1443
    Min Variance: 1.47e-05
    p1=0.248, p2=0.228
--- Iter [1183/2000] ---
    Total Loss: 1580.9056
    MSE Component: 1.5718 (Weighted: 1571.7779)
    NLL Component: 9.0400
    Min Variance: 1.14e-05
    p1=0.248, p2=0.228
--- Iter [1184/2000] ---
    Total Loss: 1401.3799
    MSE Component: 1.3914 (Weighted: 1391.4078)
    NLL Component: 9.8844
    Min Variance: 2.86e-05
    p1=0.248, p2=0.228
--- Iter [1185/2000] ---
    Total Loss: 1619.4882
    MSE Component: 1.6080 (Weighted: 1608.0372)
    NLL Component: 11.3633
    Min Variance: 1.97e-05
    p1=0.248, p2=0.228
--- Iter [1186/2000] ---
    Total Loss: 1801.2233
    MSE Component: 1.7916 (Weighted: 1791.6399)
    NLL Component: 9.4957
    Min Variance: 1.03e-05
    p1=0.248, p2=0.228

```



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--- Iter [1187/2000] ---
Total Loss: 1876.6639
MSE Component: 1.8683 (Weighted: 1868.2508)
NLL Component: 8.3255
Min Variance: 1.86e-05
p1=0.248, p2=0.228
--- Iter [1188/2000] ---
Total Loss: 1965.3076
MSE Component: 1.9525 (Weighted: 1952.4912)
NLL Component: 12.7287
Min Variance: 6.27e-06
p1=0.248, p2=0.228
--- Iter [1189/2000] ---
Total Loss: 1458.8451
MSE Component: 1.4479 (Weighted: 1447.8574)
NLL Component: 10.9000
Min Variance: 2.12e-05
p1=0.248, p2=0.228
--- Iter [1190/2000] ---
Total Loss: 1959.8888
MSE Component: 1.9480 (Weighted: 1947.9550)
NLL Component: 11.8462
Min Variance: 1.29e-05
p1=0.248, p2=0.228

--- Validation at iteration 1190 ---
Average MSE: 235.5751, Average ANEES: 569.5135
-----
--- Iter [1191/2000] ---
Total Loss: 1969.7810
MSE Component: 1.9539 (Weighted: 1953.9169)
NLL Component: 15.7765
Min Variance: 1.51e-05
p1=0.248, p2=0.228
--- Iter [1192/2000] ---
Total Loss: 1281.6642
MSE Component: 1.2694 (Weighted: 1269.3830)
NLL Component: 12.1936
Min Variance: 1.74e-05
p1=0.248, p2=0.228
--- Iter [1193/2000] ---
Total Loss: 1576.4630
MSE Component: 1.5677 (Weighted: 1567.7060)
NLL Component: 8.6694
Min Variance: 2.25e-05
p1=0.248, p2=0.228
--- Iter [1194/2000] ---
Total Loss: 1499.2306

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```

MSE Component: 1.4904 (Weighted: 1490.3718)
NLL Component: 8.7711
Min Variance: 1.49e-05
p1=0.248, p2=0.228
--- Iter [1195/2000] ---
Total Loss: 1506.8082
MSE Component: 1.4977 (Weighted: 1497.6690)
NLL Component: 9.0517
Min Variance: 1.88e-05
p1=0.248, p2=0.228
--- Iter [1196/2000] ---
Total Loss: 1928.0398
MSE Component: 1.9173 (Weighted: 1917.3214)
NLL Component: 10.6308
Min Variance: 1.90e-05
p1=0.248, p2=0.228
--- Iter [1197/2000] ---
Total Loss: 3252.6040
MSE Component: 3.2434 (Weighted: 3243.3791)
NLL Component: 9.1371
Min Variance: 1.48e-05
p1=0.248, p2=0.228
--- Iter [1198/2000] ---
Total Loss: 2624.1968
MSE Component: 2.6146 (Weighted: 2614.6007)
NLL Component: 9.5086
Min Variance: 7.07e-06
p1=0.248, p2=0.228
--- Iter [1199/2000] ---
Total Loss: 1523.2540
MSE Component: 1.5119 (Weighted: 1511.9082)
NLL Component: 11.2582
Min Variance: 1.95e-05
p1=0.248, p2=0.228
--- Iter [1200/2000] ---
Total Loss: 1815.2312
MSE Component: 1.8052 (Weighted: 1805.1902)
NLL Component: 9.9534
Min Variance: 2.56e-05
p1=0.248, p2=0.228

--- Validation at iteration 1200 ---
Average MSE: 235.6473, Average ANEES: 448.0300
-----
--- Iter [1201/2000] ---
Total Loss: 1821.9220
MSE Component: 1.8117 (Weighted: 1811.6843)
NLL Component: 10.1501

```

```

Min Variance: 8.97e-06
p1=0.248, p2=0.228
--- Iter [1202/2000] ---
Total Loss: 2059.5188
MSE Component: 2.0471 (Weighted: 2047.1365)
NLL Component: 12.2946
Min Variance: 7.94e-06
p1=0.248, p2=0.228
--- Iter [1203/2000] ---
Total Loss: 1581.9269
MSE Component: 1.5686 (Weighted: 1568.5948)
NLL Component: 13.2444
Min Variance: 1.50e-05
p1=0.248, p2=0.228
--- Iter [1204/2000] ---
Total Loss: 2313.4341
MSE Component: 2.3013 (Weighted: 2301.2738)
NLL Component: 12.0726
Min Variance: 6.17e-06
p1=0.248, p2=0.228
--- Iter [1205/2000] ---
Total Loss: 1774.0358
MSE Component: 1.7653 (Weighted: 1765.2799)
NLL Component: 8.6682
Min Variance: 1.37e-05
p1=0.248, p2=0.228
--- Iter [1206/2000] ---
Total Loss: 1962.9166
MSE Component: 1.9537 (Weighted: 1953.6598)
NLL Component: 9.1692
Min Variance: 2.86e-05
p1=0.248, p2=0.228
--- Iter [1207/2000] ---
Total Loss: 1689.1180
MSE Component: 1.6812 (Weighted: 1681.2441)
NLL Component: 7.7862
Min Variance: 1.07e-05
p1=0.248, p2=0.228
--- Iter [1208/2000] ---
Total Loss: 1594.5109
MSE Component: 1.5841 (Weighted: 1584.1033)
NLL Component: 10.3198
Min Variance: 1.56e-05
p1=0.248, p2=0.228
--- Iter [1209/2000] ---
Total Loss: 1595.9034
MSE Component: 1.5874 (Weighted: 1587.3979)
NLL Component: 8.4178

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    Min Variance: 1.45e-05
    p1=0.248, p2=0.228
--- Iter [1210/2000] ---
    Total Loss: 2023.4060
    MSE Component: 2.0120 (Weighted: 2011.9932)
    NLL Component: 11.3252
    Min Variance: 6.90e-06
    p1=0.248, p2=0.228

--- Validation at iteration 1210 ---
    Average MSE: 232.2415, Average ANEES: 477.7906
-----
--- Iter [1211/2000] ---
    Total Loss: 1660.9567
    MSE Component: 1.6480 (Weighted: 1647.9948)
    NLL Component: 12.8743
    Min Variance: 1.77e-05
    p1=0.248, p2=0.228
--- Iter [1212/2000] ---
    Total Loss: 1348.3278
    MSE Component: 1.3395 (Weighted: 1339.4864)
    NLL Component: 8.7538
    Min Variance: 1.85e-05
    p1=0.248, p2=0.228
--- Iter [1213/2000] ---
    Total Loss: 1422.2246
    MSE Component: 1.4098 (Weighted: 1409.7800)
    NLL Component: 12.3569
    Min Variance: 1.76e-05
    p1=0.248, p2=0.228
--- Iter [1214/2000] ---
    Total Loss: 1853.0729
    MSE Component: 1.8430 (Weighted: 1843.0020)
    NLL Component: 9.9833
    Min Variance: 1.15e-05
    p1=0.248, p2=0.228
--- Iter [1215/2000] ---
    Total Loss: 1899.0267
    MSE Component: 1.8898 (Weighted: 1889.8201)
    NLL Component: 9.1191
    Min Variance: 7.82e-06
    p1=0.248, p2=0.228
--- Iter [1216/2000] ---
    Total Loss: 2023.9037
    MSE Component: 2.0133 (Weighted: 2013.2751)
    NLL Component: 10.5409
    Min Variance: 1.59e-05
    p1=0.248, p2=0.228

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--- Iter [1217/2000] ---
Total Loss: 1655.5220
MSE Component: 1.6464 (Weighted: 1646.4424)
NLL Component: 8.9919
Min Variance: 6.29e-06
p1=0.248, p2=0.228
--- Iter [1218/2000] ---
Total Loss: 1844.7759
MSE Component: 1.8346 (Weighted: 1834.6300)
NLL Component: 10.0582
Min Variance: 1.49e-05
p1=0.248, p2=0.228
--- Iter [1219/2000] ---
Total Loss: 1585.1643
MSE Component: 1.5742 (Weighted: 1574.1731)
NLL Component: 10.9036
Min Variance: 2.68e-06
p1=0.248, p2=0.228
--- Iter [1220/2000] ---
Total Loss: 1803.8743
MSE Component: 1.7960 (Weighted: 1796.0037)
NLL Component: 7.7829
Min Variance: 7.69e-06
p1=0.248, p2=0.228

--- Validation at iteration 1220 ---
Average MSE: 253.3592, Average ANEES: 540.8945
-----
--- Iter [1221/2000] ---
Total Loss: 2460.4253
MSE Component: 2.4530 (Weighted: 2452.9543)
NLL Component: 7.3833
Min Variance: 1.57e-05
p1=0.248, p2=0.228
--- Iter [1222/2000] ---
Total Loss: 1917.2297
MSE Component: 1.9084 (Weighted: 1908.3797)
NLL Component: 8.7624
Min Variance: 2.45e-05
p1=0.248, p2=0.228
--- Iter [1223/2000] ---
Total Loss: 1950.7722
MSE Component: 1.9399 (Weighted: 1939.8642)
NLL Component: 10.8204
Min Variance: 1.31e-05
p1=0.248, p2=0.228
--- Iter [1224/2000] ---
Total Loss: 2174.9353

```

```

MSE Component: 2.1604 (Weighted: 2160.4049)
NLL Component: 14.4425
Min Variance: 4.77e-06
p1=0.248, p2=0.228
--- Iter [1225/2000] ---
Total Loss: 1666.9666
MSE Component: 1.6560 (Weighted: 1655.9852)
NLL Component: 10.8937
Min Variance: 2.61e-05
p1=0.248, p2=0.228
--- Iter [1226/2000] ---
Total Loss: 1443.0997
MSE Component: 1.4355 (Weighted: 1435.5395)
NLL Component: 7.4726
Min Variance: 1.85e-05
p1=0.248, p2=0.228
--- Iter [1227/2000] ---
Total Loss: 1510.2279
MSE Component: 1.5018 (Weighted: 1501.8266)
NLL Component: 8.3137
Min Variance: 2.47e-05
p1=0.248, p2=0.228
--- Iter [1228/2000] ---
Total Loss: 1549.3529
MSE Component: 1.5384 (Weighted: 1538.3861)
NLL Component: 10.8792
Min Variance: 1.42e-05
p1=0.248, p2=0.228
--- Iter [1229/2000] ---
Total Loss: 2006.4432
MSE Component: 1.9993 (Weighted: 1999.3142)
NLL Component: 7.0414
Min Variance: 1.36e-05
p1=0.248, p2=0.228
--- Iter [1230/2000] ---
Total Loss: 1473.1714
MSE Component: 1.4653 (Weighted: 1465.2580)
NLL Component: 7.8257
Min Variance: 1.24e-05
p1=0.248, p2=0.228

--- Validation at iteration 1230 ---
Average MSE: 232.3261, Average ANEES: 399.2243
-----
--- Iter [1231/2000] ---
Total Loss: 2182.7803
MSE Component: 2.1750 (Weighted: 2175.0188)
NLL Component: 7.6737

```

```

    Min Variance: 9.46e-06
    p1=0.248, p2=0.228
--- Iter [1232/2000] ---
    Total Loss: 2107.3672
    MSE Component: 2.0966 (Weighted: 2096.6253)
    NLL Component: 10.6543
    Min Variance: 6.50e-06
    p1=0.248, p2=0.228
--- Iter [1233/2000] ---
    Total Loss: 1958.3807
    MSE Component: 1.9470 (Weighted: 1947.0283)
    NLL Component: 11.2648
    Min Variance: 9.63e-06
    p1=0.248, p2=0.228
--- Iter [1234/2000] ---
    Total Loss: 2055.0588
    MSE Component: 2.0464 (Weighted: 2046.3657)
    NLL Component: 8.6055
    Min Variance: 1.60e-05
    p1=0.248, p2=0.228
--- Iter [1235/2000] ---
    Total Loss: 1700.1582
    MSE Component: 1.6896 (Weighted: 1689.6013)
    NLL Component: 10.4692
    Min Variance: 2.05e-05
    p1=0.248, p2=0.228
--- Iter [1236/2000] ---
    Total Loss: 2032.6552
    MSE Component: 2.0234 (Weighted: 2023.3760)
    NLL Component: 9.1916
    Min Variance: 2.41e-05
    p1=0.248, p2=0.228
--- Iter [1237/2000] ---
    Total Loss: 2455.9377
    MSE Component: 2.4454 (Weighted: 2445.3857)
    NLL Component: 10.4645
    Min Variance: 8.32e-06
    p1=0.248, p2=0.228
--- Iter [1238/2000] ---
    Total Loss: 1970.2255
    MSE Component: 1.9620 (Weighted: 1961.9797)
    NLL Component: 8.1581
    Min Variance: 4.70e-06
    p1=0.248, p2=0.228
--- Iter [1239/2000] ---
    Total Loss: 1393.1390
    MSE Component: 1.3836 (Weighted: 1383.6365)
    NLL Component: 9.4149

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    Min Variance: 1.46e-05
    p1=0.248, p2=0.228
--- Iter [1240/2000] ---
    Total Loss: 2323.1531
    MSE Component: 2.3129 (Weighted: 2312.9287)
    NLL Component: 10.1367
    Min Variance: 2.64e-05
    p1=0.248, p2=0.227

--- Validation at iteration 1240 ---
    Average MSE: 231.0343, Average ANEES: 441.5256
-----
--- Iter [1241/2000] ---
    Total Loss: 1990.9054
    MSE Component: 1.9830 (Weighted: 1982.9676)
    NLL Component: 7.8500
    Min Variance: 1.68e-05
    p1=0.248, p2=0.227
--- Iter [1242/2000] ---
    Total Loss: 2093.5303
    MSE Component: 2.0851 (Weighted: 2085.0654)
    NLL Component: 8.3773
    Min Variance: 1.36e-05
    p1=0.248, p2=0.227
--- Iter [1243/2000] ---
    Total Loss: 1549.1327
    MSE Component: 1.5424 (Weighted: 1542.4099)
    NLL Component: 6.6353
    Min Variance: 2.06e-05
    p1=0.248, p2=0.227
--- Iter [1244/2000] ---
    Total Loss: 1784.4860
    MSE Component: 1.7749 (Weighted: 1774.8640)
    NLL Component: 9.5344
    Min Variance: 1.14e-05
    p1=0.248, p2=0.227
--- Iter [1245/2000] ---
    Total Loss: 1322.8682
    MSE Component: 1.3148 (Weighted: 1314.7554)
    NLL Component: 8.0252
    Min Variance: 1.37e-05
    p1=0.248, p2=0.227
--- Iter [1246/2000] ---
    Total Loss: 1498.5631
    MSE Component: 1.4904 (Weighted: 1490.3944)
    NLL Component: 8.0811
    Min Variance: 1.32e-05
    p1=0.248, p2=0.227

```



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--- Iter [1247/2000] ---
Total Loss: 1508.6808
MSE Component: 1.4977 (Weighted: 1497.7158)
NLL Component: 10.8774
Min Variance: 1.32e-05
p1=0.248, p2=0.227
--- Iter [1248/2000] ---
Total Loss: 1250.6832
MSE Component: 1.2443 (Weighted: 1244.2811)
NLL Component: 6.3147
Min Variance: 1.74e-05
p1=0.247, p2=0.227
--- Iter [1249/2000] ---
Total Loss: 1808.1722
MSE Component: 1.7956 (Weighted: 1795.5812)
NLL Component: 12.5035
Min Variance: 1.58e-05
p1=0.247, p2=0.227
--- Iter [1250/2000] ---
Total Loss: 1582.5521
MSE Component: 1.5742 (Weighted: 1574.2302)
NLL Component: 8.2344
Min Variance: 1.82e-05
p1=0.247, p2=0.227

--- Validation at iteration 1250 ---
Average MSE: 227.8307, Average ANEES: 442.9035
-----
--- Iter [1251/2000] ---
Total Loss: 1842.3994
MSE Component: 1.8338 (Weighted: 1833.8121)
NLL Component: 8.4998
Min Variance: 1.87e-05
p1=0.247, p2=0.227
--- Iter [1252/2000] ---
Total Loss: 1555.5538
MSE Component: 1.5469 (Weighted: 1546.8640)
NLL Component: 8.6023
Min Variance: 1.49e-05
p1=0.247, p2=0.227
--- Iter [1253/2000] ---
Total Loss: 1621.6464
MSE Component: 1.6122 (Weighted: 1612.1804)
NLL Component: 9.3785
Min Variance: 1.56e-05
p1=0.247, p2=0.227
--- Iter [1254/2000] ---
Total Loss: 1414.2731

```

```

MSE Component: 1.4049 (Weighted: 1404.9126)
NLL Component: 9.2730
Min Variance: 2.47e-05
p1=0.247, p2=0.227
--- Iter [1255/2000] ---
Total Loss: 1386.2452
MSE Component: 1.3795 (Weighted: 1379.4593)
NLL Component: 6.6985
Min Variance: 4.13e-06
p1=0.247, p2=0.227
--- Iter [1256/2000] ---
Total Loss: 1470.9237
MSE Component: 1.4621 (Weighted: 1462.0931)
NLL Component: 8.7430
Min Variance: 2.10e-05
p1=0.247, p2=0.227
--- Iter [1257/2000] ---
Total Loss: 2068.9451
MSE Component: 2.0583 (Weighted: 2058.2521)
NLL Component: 10.6051
Min Variance: 1.84e-05
p1=0.247, p2=0.227
--- Iter [1258/2000] ---
Total Loss: 2073.3164
MSE Component: 2.0653 (Weighted: 2065.3117)
NLL Component: 7.9170
Min Variance: 9.71e-06
p1=0.247, p2=0.227
--- Iter [1259/2000] ---
Total Loss: 2221.5444
MSE Component: 2.2103 (Weighted: 2210.3002)
NLL Component: 11.1566
Min Variance: 3.74e-06
p1=0.247, p2=0.227
--- Iter [1260/2000] ---
Total Loss: 1889.8306
MSE Component: 1.8803 (Weighted: 1880.2829)
NLL Component: 9.4602
Min Variance: 9.03e-06
p1=0.247, p2=0.227

--- Validation at iteration 1260 ---
Average MSE: 253.7447, Average ANEES: 452.3375
-----
--- Iter [1261/2000] ---
Total Loss: 1493.2019
MSE Component: 1.4845 (Weighted: 1484.4528)
NLL Component: 8.6615

```

```

Min Variance: 1.72e-05
p1=0.247, p2=0.227
--- Iter [1262/2000] ---
Total Loss: 1539.7327
MSE Component: 1.5323 (Weighted: 1532.3279)
NLL Component: 7.3173
Min Variance: 7.90e-06
p1=0.247, p2=0.227
--- Iter [1263/2000] ---
Total Loss: 1444.3567
MSE Component: 1.4354 (Weighted: 1435.3691)
NLL Component: 8.9000
Min Variance: 2.35e-05
p1=0.247, p2=0.227
--- Iter [1264/2000] ---
Total Loss: 1267.6157
MSE Component: 1.2581 (Weighted: 1258.1340)
NLL Component: 9.3942
Min Variance: 1.16e-05
p1=0.247, p2=0.227
--- Iter [1265/2000] ---
Total Loss: 1794.7894
MSE Component: 1.7834 (Weighted: 1783.4185)
NLL Component: 11.2833
Min Variance: 1.49e-05
p1=0.247, p2=0.227
--- Iter [1266/2000] ---
Total Loss: 1156.8479
MSE Component: 1.1490 (Weighted: 1149.0411)
NLL Component: 7.7194
Min Variance: 1.53e-05
p1=0.247, p2=0.227
--- Iter [1267/2000] ---
Total Loss: 1496.1460
MSE Component: 1.4861 (Weighted: 1486.0867)
NLL Component: 9.9719
Min Variance: 1.87e-05
p1=0.247, p2=0.227
--- Iter [1268/2000] ---
Total Loss: 1694.3281
MSE Component: 1.6878 (Weighted: 1687.7886)
NLL Component: 6.4520
Min Variance: 1.06e-05
p1=0.247, p2=0.227
--- Iter [1269/2000] ---
Total Loss: 1674.3143
MSE Component: 1.6643 (Weighted: 1664.3059)
NLL Component: 9.9209

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    Min Variance: 1.95e-05
    p1=0.247, p2=0.227
--- Iter [1270/2000] ---
    Total Loss: 1806.3925
    MSE Component: 1.7979 (Weighted: 1797.9194)
    NLL Component: 8.3855
    Min Variance: 8.26e-06
    p1=0.247, p2=0.227

--- Validation at iteration 1270 ---
    Average MSE: 244.5103, Average ANEES: 435.3880
-----
--- Iter [1271/2000] ---
    Total Loss: 1443.0546
    MSE Component: 1.4337 (Weighted: 1433.7245)
    NLL Component: 9.2426
    Min Variance: 2.45e-05
    p1=0.247, p2=0.227
--- Iter [1272/2000] ---
    Total Loss: 1482.6702
    MSE Component: 1.4737 (Weighted: 1473.7486)
    NLL Component: 8.8341
    Min Variance: 2.66e-06
    p1=0.247, p2=0.227
--- Iter [1273/2000] ---
    Total Loss: 1410.3915
    MSE Component: 1.4020 (Weighted: 1402.0236)
    NLL Component: 8.2804
    Min Variance: 6.85e-06
    p1=0.247, p2=0.227
--- Iter [1274/2000] ---
    Total Loss: 1492.8746
    MSE Component: 1.4830 (Weighted: 1483.0235)
    NLL Component: 9.7635
    Min Variance: 1.16e-05
    p1=0.247, p2=0.227
--- Iter [1275/2000] ---
    Total Loss: 1600.0841
    MSE Component: 1.5903 (Weighted: 1590.3473)
    NLL Component: 9.6493
    Min Variance: 1.93e-05
    p1=0.247, p2=0.227
--- Iter [1276/2000] ---
    Total Loss: 1824.0592
    MSE Component: 1.8131 (Weighted: 1813.0664)
    NLL Component: 10.9052
    Min Variance: 1.78e-05
    p1=0.247, p2=0.227

```

```

--- Iter [1277/2000] ---
Total Loss: 1376.6508
MSE Component: 1.3697 (Weighted: 1369.7013)
NLL Component: 6.8619
Min Variance: 2.62e-05
p1=0.247, p2=0.227
--- Iter [1278/2000] ---
Total Loss: 1277.8414
MSE Component: 1.2708 (Weighted: 1270.7816)
NLL Component: 6.9723
Min Variance: 2.71e-05
p1=0.247, p2=0.227
--- Iter [1279/2000] ---
Total Loss: 1229.7411
MSE Component: 1.2242 (Weighted: 1224.2217)
NLL Component: 5.4319
Min Variance: 2.08e-05
p1=0.247, p2=0.227
--- Iter [1280/2000] ---
Total Loss: 1494.1208
MSE Component: 1.4820 (Weighted: 1482.0008)
NLL Component: 12.0325
Min Variance: 4.82e-06
p1=0.247, p2=0.227

--- Validation at iteration 1280 ---
Average MSE: 243.6643, Average ANEES: 394.9841
-----
--- Iter [1281/2000] ---
Total Loss: 1421.5728
MSE Component: 1.4131 (Weighted: 1413.1488)
NLL Component: 8.3364
Min Variance: 2.18e-05
p1=0.247, p2=0.227
--- Iter [1282/2000] ---
Total Loss: 2178.4795
MSE Component: 2.1700 (Weighted: 2169.9705)
NLL Component: 8.4215
Min Variance: 9.29e-06
p1=0.247, p2=0.227
--- Iter [1283/2000] ---
Total Loss: 1626.6736
MSE Component: 1.6185 (Weighted: 1618.5178)
NLL Component: 8.0683
Min Variance: 2.16e-05
p1=0.247, p2=0.227
--- Iter [1284/2000] ---
Total Loss: 1323.5879

```

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MSE Component: 1.3149 (Weighted: 1314.8562)
NLL Component: 8.6442
Min Variance: 1.18e-05
p1=0.247, p2=0.227
--- Iter [1285/2000] ---
Total Loss: 1657.0048
MSE Component: 1.6496 (Weighted: 1649.6286)
NLL Component: 7.2886
Min Variance: 8.48e-06
p1=0.247, p2=0.227
--- Iter [1286/2000] ---
Total Loss: 1851.8379
MSE Component: 1.8449 (Weighted: 1844.8925)
NLL Component: 6.8579
Min Variance: 6.85e-06
p1=0.247, p2=0.227
--- Iter [1287/2000] ---
Total Loss: 1497.1116
MSE Component: 1.4886 (Weighted: 1488.5811)
NLL Component: 8.4430
Min Variance: 1.54e-05
p1=0.247, p2=0.227
--- Iter [1288/2000] ---
Total Loss: 1981.1470
MSE Component: 1.9715 (Weighted: 1971.5439)
NLL Component: 9.5154
Min Variance: 2.02e-05
p1=0.247, p2=0.227
--- Iter [1289/2000] ---
Total Loss: 1744.5109
MSE Component: 1.7345 (Weighted: 1734.4854)
NLL Component: 9.9380
Min Variance: 1.22e-05
p1=0.247, p2=0.227
--- Iter [1290/2000] ---
Total Loss: 1319.1450
MSE Component: 1.3124 (Weighted: 1312.3759)
NLL Component: 6.6816
Min Variance: 2.19e-05
p1=0.247, p2=0.227

--- Validation at iteration 1290 ---
Average MSE: 240.0076, Average ANEES: 509.3979
-----
--- Iter [1291/2000] ---
Total Loss: 1558.0905
MSE Component: 1.5505 (Weighted: 1550.4537)
NLL Component: 7.5493

```

```

Min Variance: 1.61e-05
p1=0.247, p2=0.227
--- Iter [1292/2000] ---
Total Loss: 1138.2168
MSE Component: 1.1307 (Weighted: 1130.7032)
NLL Component: 7.4260
Min Variance: 2.78e-05
p1=0.247, p2=0.227
--- Iter [1293/2000] ---
Total Loss: 1469.6422
MSE Component: 1.4625 (Weighted: 1462.4966)
NLL Component: 7.0581
Min Variance: 1.88e-05
p1=0.247, p2=0.227
--- Iter [1294/2000] ---
Total Loss: 1692.6027
MSE Component: 1.6864 (Weighted: 1686.3515)
NLL Component: 6.1636
Min Variance: 1.69e-05
p1=0.247, p2=0.227
--- Iter [1295/2000] ---
Total Loss: 1706.1311
MSE Component: 1.6940 (Weighted: 1693.9915)
NLL Component: 12.0520
Min Variance: 1.04e-05
p1=0.247, p2=0.227
--- Iter [1296/2000] ---
Total Loss: 2061.6992
MSE Component: 2.0523 (Weighted: 2052.2766)
NLL Component: 9.3351
Min Variance: 2.18e-05
p1=0.247, p2=0.227
--- Iter [1297/2000] ---
Total Loss: 1448.5707
MSE Component: 1.4374 (Weighted: 1437.3856)
NLL Component: 11.0976
Min Variance: 1.98e-05
p1=0.247, p2=0.227
--- Iter [1298/2000] ---
Total Loss: 2311.0562
MSE Component: 2.3024 (Weighted: 2302.4104)
NLL Component: 8.5581
Min Variance: 1.51e-05
p1=0.247, p2=0.227
--- Iter [1299/2000] ---
Total Loss: 3013.5513
MSE Component: 3.0057 (Weighted: 3005.7437)
NLL Component: 7.7200

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    Min Variance: 1.96e-05
    p1=0.247, p2=0.227
--- Iter [1300/2000] ---
    Total Loss: 2768.2793
    MSE Component: 2.7605 (Weighted: 2760.5174)
    NLL Component: 7.6742
    Min Variance: 2.22e-05
    p1=0.247, p2=0.227

--- Validation at iteration 1300 ---
    Average MSE: 252.9736, Average ANEES: 433.5722
-----
--- Iter [1301/2000] ---
    Total Loss: 1853.9153
    MSE Component: 1.8464 (Weighted: 1846.3911)
    NLL Component: 7.4366
    Min Variance: 1.61e-05
    p1=0.247, p2=0.227
--- Iter [1302/2000] ---
    Total Loss: 2511.5798
    MSE Component: 2.5047 (Weighted: 2504.6682)
    NLL Component: 6.8242
    Min Variance: 2.15e-05
    p1=0.247, p2=0.227
--- Iter [1303/2000] ---
    Total Loss: 1559.0574
    MSE Component: 1.5495 (Weighted: 1549.4771)
    NLL Component: 9.4929
    Min Variance: 1.26e-05
    p1=0.247, p2=0.227
--- Iter [1304/2000] ---
    Total Loss: 2138.6541
    MSE Component: 2.1310 (Weighted: 2130.9767)
    NLL Component: 7.5902
    Min Variance: 5.02e-06
    p1=0.247, p2=0.227
--- Iter [1305/2000] ---
    Total Loss: 2660.3420
    MSE Component: 2.6506 (Weighted: 2650.5597)
    NLL Component: 9.6951
    Min Variance: 1.39e-05
    p1=0.247, p2=0.227
--- Iter [1306/2000] ---
    Total Loss: 3274.7178
    MSE Component: 3.2654 (Weighted: 3265.4493)
    NLL Component: 9.1813
    Min Variance: 1.17e-05
    p1=0.247, p2=0.227

```



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--- Iter [1307/2000] ---
Total Loss: 2014.8302
MSE Component: 2.0054 (Weighted: 2005.3523)
NLL Component: 9.3904
Min Variance: 2.44e-05
p1=0.247, p2=0.227
--- Iter [1308/2000] ---
Total Loss: 1705.7765
MSE Component: 1.6988 (Weighted: 1698.7720)
NLL Component: 6.9170
Min Variance: 1.69e-05
p1=0.247, p2=0.227
--- Iter [1309/2000] ---
Total Loss: 1993.1901
MSE Component: 1.9830 (Weighted: 1982.9851)
NLL Component: 10.1174
Min Variance: 1.13e-05
p1=0.246, p2=0.227
--- Iter [1310/2000] ---
Total Loss: 2057.6848
MSE Component: 2.0490 (Weighted: 2049.0315)
NLL Component: 8.5660
Min Variance: 1.39e-05
p1=0.246, p2=0.227

--- Validation at iteration 1310 ---
Average MSE: 268.4529, Average ANEES: 335.7333
-----
--- Iter [1311/2000] ---
Total Loss: 1587.6947
MSE Component: 1.5783 (Weighted: 1578.2965)
NLL Component: 9.3107
Min Variance: 1.29e-05
p1=0.246, p2=0.227
--- Iter [1312/2000] ---
Total Loss: 1696.3964
MSE Component: 1.6885 (Weighted: 1688.4974)
NLL Component: 7.8114
Min Variance: 1.84e-05
p1=0.246, p2=0.227
--- Iter [1313/2000] ---
Total Loss: 1258.9371
MSE Component: 1.2517 (Weighted: 1251.6549)
NLL Component: 7.1946
Min Variance: 1.54e-05
p1=0.246, p2=0.227
--- Iter [1314/2000] ---
Total Loss: 1249.7391

```

```

MSE Component: 1.2443 (Weighted: 1244.3191)
NLL Component: 5.3326
Min Variance: 1.82e-05
p1=0.246, p2=0.227
--- Iter [1315/2000] ---
Total Loss: 1423.3069
MSE Component: 1.4161 (Weighted: 1416.0579)
NLL Component: 7.1613
Min Variance: 2.28e-05
p1=0.246, p2=0.227
--- Iter [1316/2000] ---
Total Loss: 1665.2515
MSE Component: 1.6586 (Weighted: 1658.6151)
NLL Component: 6.5488
Min Variance: 1.43e-05
p1=0.246, p2=0.227
--- Iter [1317/2000] ---
Total Loss: 1703.6970
MSE Component: 1.6959 (Weighted: 1695.9221)
NLL Component: 7.6874
Min Variance: 1.69e-05
p1=0.246, p2=0.227
--- Iter [1318/2000] ---
Total Loss: 2114.9741
MSE Component: 2.1017 (Weighted: 2101.6738)
NLL Component: 13.2129
Min Variance: 6.87e-06
p1=0.246, p2=0.227
--- Iter [1319/2000] ---
Total Loss: 1885.7860
MSE Component: 1.8773 (Weighted: 1877.2900)
NLL Component: 8.4084
Min Variance: 7.19e-06
p1=0.246, p2=0.227
--- Iter [1320/2000] ---
Total Loss: 1389.3051
MSE Component: 1.3829 (Weighted: 1382.9325)
NLL Component: 6.2850
Min Variance: 2.55e-05
p1=0.246, p2=0.227

--- Validation at iteration 1320 ---
Average MSE: 244.7806, Average ANEES: 420.7690
-----
--- Iter [1321/2000] ---
Total Loss: 1739.3552
MSE Component: 1.7284 (Weighted: 1728.4226)
NLL Component: 10.8451

```

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    Min Variance: 1.13e-05
    p1=0.246, p2=0.227
--- Iter [1322/2000] ---
    Total Loss: 1979.0138
    MSE Component: 1.9709 (Weighted: 1970.9245)
    NLL Component: 8.0018
    Min Variance: 1.09e-05
    p1=0.246, p2=0.227
--- Iter [1323/2000] ---
    Total Loss: 2781.8638
    MSE Component: 2.7759 (Weighted: 2775.9175)
    NLL Component: 5.8588
    Min Variance: 1.67e-05
    p1=0.246, p2=0.227
--- Iter [1324/2000] ---
    Total Loss: 2546.9128
    MSE Component: 2.5391 (Weighted: 2539.0534)
    NLL Component: 7.7720
    Min Variance: 1.75e-05
    p1=0.246, p2=0.227
--- Iter [1325/2000] ---
    Total Loss: 1872.0121
    MSE Component: 1.8640 (Weighted: 1864.0260)
    NLL Component: 7.8986
    Min Variance: 1.63e-05
    p1=0.246, p2=0.227
--- Iter [1326/2000] ---
    Total Loss: 1124.3597
    MSE Component: 1.1185 (Weighted: 1118.4540)
    NLL Component: 5.8182
    Min Variance: 9.07e-06
    p1=0.246, p2=0.227
--- Iter [1327/2000] ---
    Total Loss: 1453.7098
    MSE Component: 1.4444 (Weighted: 1444.4422)
    NLL Component: 9.1802
    Min Variance: 1.63e-05
    p1=0.246, p2=0.227
--- Iter [1328/2000] ---
    Total Loss: 1100.4094
    MSE Component: 1.0946 (Weighted: 1094.6347)
    NLL Component: 5.6873
    Min Variance: 1.42e-05
    p1=0.246, p2=0.227
--- Iter [1329/2000] ---
    Total Loss: 2043.8716
    MSE Component: 2.0333 (Weighted: 2033.3292)
    NLL Component: 10.4549

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```

    Min Variance: 1.12e-05
    p1=0.246, p2=0.227
--- Iter [1330/2000] ---
    Total Loss: 2499.1045
    MSE Component: 2.4914 (Weighted: 2491.3859)
    NLL Component: 7.6312
    Min Variance: 1.54e-05
    p1=0.246, p2=0.227

--- Validation at iteration 1330 ---
    Average MSE: 238.0153, Average ANEES: 433.7715
-----
--- Iter [1331/2000] ---
    Total Loss: 1998.3743
    MSE Component: 1.9895 (Weighted: 1989.5107)
    NLL Component: 8.7761
    Min Variance: 1.29e-05
    p1=0.246, p2=0.227
--- Iter [1332/2000] ---
    Total Loss: 1142.9305
    MSE Component: 1.1368 (Weighted: 1136.7728)
    NLL Component: 6.0703
    Min Variance: 2.39e-05
    p1=0.246, p2=0.227
--- Iter [1333/2000] ---
    Total Loss: 1329.6373
    MSE Component: 1.3201 (Weighted: 1320.1418)
    NLL Component: 9.4080
    Min Variance: 1.40e-05
    p1=0.246, p2=0.227
--- Iter [1334/2000] ---
    Total Loss: 1353.0846
    MSE Component: 1.3442 (Weighted: 1344.1886)
    NLL Component: 8.8085
    Min Variance: 1.66e-05
    p1=0.246, p2=0.227
--- Iter [1335/2000] ---
    Total Loss: 1336.1086
    MSE Component: 1.3289 (Weighted: 1328.9446)
    NLL Component: 7.0765
    Min Variance: 1.33e-05
    p1=0.246, p2=0.227
--- Iter [1336/2000] ---
    Total Loss: 1512.5685
    MSE Component: 1.5031 (Weighted: 1503.1321)
    NLL Component: 9.3489
    Min Variance: 9.31e-06
    p1=0.246, p2=0.227

```

```

--- Iter [1337/2000] ---
Total Loss: 1318.8749
MSE Component: 1.3129 (Weighted: 1312.9272)
NLL Component: 5.8601
Min Variance: 1.26e-05
p1=0.246, p2=0.227
--- Iter [1338/2000] ---
Total Loss: 1453.8427
MSE Component: 1.4480 (Weighted: 1447.9891)
NLL Component: 5.7659
Min Variance: 1.65e-05
p1=0.246, p2=0.227
--- Iter [1339/2000] ---
Total Loss: 1255.8435
MSE Component: 1.2491 (Weighted: 1249.1091)
NLL Component: 6.6468
Min Variance: 1.27e-05
p1=0.246, p2=0.227
--- Iter [1340/2000] ---
Total Loss: 1311.0532
MSE Component: 1.3027 (Weighted: 1302.6603)
NLL Component: 8.3053
Min Variance: 8.17e-06
p1=0.246, p2=0.227

--- Validation at iteration 1340 ---
Average MSE: 270.3512, Average ANEES: 375.9817
-----
--- Iter [1341/2000] ---
Total Loss: 1614.5811
MSE Component: 1.6073 (Weighted: 1607.2879)
NLL Component: 7.2057
Min Variance: 2.29e-05
p1=0.246, p2=0.227
--- Iter [1342/2000] ---
Total Loss: 2256.2302
MSE Component: 2.2504 (Weighted: 2250.4313)
NLL Component: 5.7113
Min Variance: 1.77e-05
p1=0.246, p2=0.227
--- Iter [1343/2000] ---
Total Loss: 1260.8579
MSE Component: 1.2514 (Weighted: 1251.3999)
NLL Component: 9.3705
Min Variance: 1.53e-05
p1=0.246, p2=0.227
--- Iter [1344/2000] ---
Total Loss: 1859.4503

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MSE Component: 1.8496 (Weighted: 1849.5938)
NLL Component: 9.7691
Min Variance: 1.74e-05
p1=0.246, p2=0.227
--- Iter [1345/2000] ---
Total Loss: 1685.0663
MSE Component: 1.6765 (Weighted: 1676.5376)
NLL Component: 8.4411
Min Variance: 1.36e-05
p1=0.246, p2=0.227
--- Iter [1346/2000] ---
Total Loss: 1364.1919
MSE Component: 1.3545 (Weighted: 1354.4909)
NLL Component: 9.6136
Min Variance: 1.73e-05
p1=0.246, p2=0.227
--- Iter [1347/2000] ---
Total Loss: 1290.4846
MSE Component: 1.2836 (Weighted: 1283.6000)
NLL Component: 6.7972
Min Variance: 1.18e-05
p1=0.246, p2=0.227
--- Iter [1348/2000] ---
Total Loss: 1682.0437
MSE Component: 1.6732 (Weighted: 1673.1813)
NLL Component: 8.7749
Min Variance: 2.22e-05
p1=0.246, p2=0.226
--- Iter [1349/2000] ---
Total Loss: 2069.9839
MSE Component: 2.0621 (Weighted: 2062.0687)
NLL Component: 7.8280
Min Variance: 1.74e-05
p1=0.246, p2=0.226
--- Iter [1350/2000] ---
Total Loss: 1317.9242
MSE Component: 1.3129 (Weighted: 1312.8747)
NLL Component: 4.9621
Min Variance: 2.16e-05
p1=0.246, p2=0.226

--- Validation at iteration 1350 ---
Average MSE: 239.9473, Average ANEES: 361.6680
-----
--- Iter [1351/2000] ---
Total Loss: 1486.9116
MSE Component: 1.4806 (Weighted: 1480.5565)
NLL Component: 6.2676

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Min Variance: 1.42e-05
p1=0.246, p2=0.226
--- Iter [1352/2000] ---
Total Loss: 1840.1313
MSE Component: 1.8323 (Weighted: 1832.2623)
NLL Component: 7.7814
Min Variance: 1.33e-05
p1=0.246, p2=0.226
--- Iter [1353/2000] ---
Total Loss: 1180.2712
MSE Component: 1.1734 (Weighted: 1173.3552)
NLL Component: 6.8285
Min Variance: 8.10e-06
p1=0.246, p2=0.226
--- Iter [1354/2000] ---
Total Loss: 1539.4365
MSE Component: 1.5307 (Weighted: 1530.6658)
NLL Component: 8.6832
Min Variance: 9.76e-06
p1=0.246, p2=0.226
--- Iter [1355/2000] ---
Total Loss: 1214.2678
MSE Component: 1.2093 (Weighted: 1209.3394)
NLL Component: 4.8410
Min Variance: 2.23e-05
p1=0.246, p2=0.226
--- Iter [1356/2000] ---
Total Loss: 1461.8042
MSE Component: 1.4512 (Weighted: 1451.2353)
NLL Component: 10.4813
Min Variance: 1.20e-05
p1=0.246, p2=0.226
--- Iter [1357/2000] ---
Total Loss: 1373.6785
MSE Component: 1.3663 (Weighted: 1366.2691)
NLL Component: 7.3218
Min Variance: 1.88e-05
p1=0.246, p2=0.226
--- Iter [1358/2000] ---
Total Loss: 1594.4358
MSE Component: 1.5855 (Weighted: 1585.4722)
NLL Component: 8.8761
Min Variance: 1.13e-05
p1=0.246, p2=0.226
--- Iter [1359/2000] ---
Total Loss: 1051.3663
MSE Component: 1.0462 (Weighted: 1046.1502)
NLL Component: 5.1286

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    Min Variance: 1.14e-05
    p1=0.246, p2=0.226
--- Iter [1360/2000] ---
    Total Loss: 1178.9139
    MSE Component: 1.1707 (Weighted: 1170.7419)
    NLL Component: 8.0844
    Min Variance: 1.51e-05
    p1=0.246, p2=0.226

--- Validation at iteration 1360 ---
    Average MSE: 237.8660, Average ANEES: 370.0790
-----
--- Iter [1361/2000] ---
    Total Loss: 1265.5609
    MSE Component: 1.2565 (Weighted: 1256.4700)
    NLL Component: 9.0034
    Min Variance: 1.79e-05
    p1=0.246, p2=0.226
--- Iter [1362/2000] ---
    Total Loss: 1624.7653
    MSE Component: 1.6177 (Weighted: 1617.7044)
    NLL Component: 6.9734
    Min Variance: 1.34e-05
    p1=0.246, p2=0.226
--- Iter [1363/2000] ---
    Total Loss: 1205.9672
    MSE Component: 1.1986 (Weighted: 1198.5672)
    NLL Component: 7.3125
    Min Variance: 7.78e-06
    p1=0.246, p2=0.226
--- Iter [1364/2000] ---
    Total Loss: 1401.3689
    MSE Component: 1.3954 (Weighted: 1395.3502)
    NLL Component: 5.9311
    Min Variance: 1.02e-05
    p1=0.246, p2=0.226
--- Iter [1365/2000] ---
    Total Loss: 1665.5583
    MSE Component: 1.6590 (Weighted: 1659.0208)
    NLL Component: 6.4501
    Min Variance: 2.33e-05
    p1=0.246, p2=0.226
--- Iter [1366/2000] ---
    Total Loss: 1229.5023
    MSE Component: 1.2220 (Weighted: 1222.0340)
    NLL Component: 7.3809
    Min Variance: 1.41e-05
    p1=0.246, p2=0.226

```



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--- Iter [1367/2000] ---
Total Loss: 1568.6174
MSE Component: 1.5608 (Weighted: 1560.8063)
NLL Component: 7.7237
Min Variance: 1.12e-05
p1=0.246, p2=0.226
--- Iter [1368/2000] ---
Total Loss: 1478.3130
MSE Component: 1.4672 (Weighted: 1467.2318)
NLL Component: 10.9937
Min Variance: 5.38e-06
p1=0.246, p2=0.226
--- Iter [1369/2000] ---
Total Loss: 1570.5464
MSE Component: 1.5629 (Weighted: 1562.8699)
NLL Component: 7.5890
Min Variance: 1.15e-05
p1=0.246, p2=0.226
--- Iter [1370/2000] ---
Total Loss: 1338.1097
MSE Component: 1.3306 (Weighted: 1330.5997)
NLL Component: 7.4226
Min Variance: 7.16e-06
p1=0.246, p2=0.226

--- Validation at iteration 1370 ---
Average MSE: 254.3763, Average ANEES: 375.8485
-----
--- Iter [1371/2000] ---
Total Loss: 1071.9116
MSE Component: 1.0659 (Weighted: 1065.8571)
NLL Component: 5.9671
Min Variance: 9.92e-06
p1=0.246, p2=0.226
--- Iter [1372/2000] ---
Total Loss: 1385.2213
MSE Component: 1.3767 (Weighted: 1376.6608)
NLL Component: 8.4730
Min Variance: 1.91e-05
p1=0.246, p2=0.226
--- Iter [1373/2000] ---
Total Loss: 1412.6741
MSE Component: 1.4049 (Weighted: 1404.9358)
NLL Component: 7.6508
Min Variance: 2.66e-05
p1=0.246, p2=0.226
--- Iter [1374/2000] ---
Total Loss: 1358.1915

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MSE Component: 1.3503 (Weighted: 1350.3145)
NLL Component: 7.7896
Min Variance: 2.20e-05
p1=0.246, p2=0.226
--- Iter [1375/2000] ---
Total Loss: 1546.2119
MSE Component: 1.5401 (Weighted: 1540.0640)
NLL Component: 6.0604
Min Variance: 2.58e-05
p1=0.246, p2=0.226
--- Iter [1376/2000] ---
Total Loss: 1359.8340
MSE Component: 1.3493 (Weighted: 1349.2540)
NLL Component: 10.4924
Min Variance: 2.74e-05
p1=0.246, p2=0.226
--- Iter [1377/2000] ---
Total Loss: 1646.6888
MSE Component: 1.6396 (Weighted: 1639.6176)
NLL Component: 6.9838
Min Variance: 7.05e-06
p1=0.246, p2=0.226
--- Iter [1378/2000] ---
Total Loss: 1341.6843
MSE Component: 1.3370 (Weighted: 1337.0306)
NLL Component: 4.5662
Min Variance: 1.16e-05
p1=0.246, p2=0.226
--- Iter [1379/2000] ---
Total Loss: 1387.5095
MSE Component: 1.3817 (Weighted: 1381.7455)
NLL Component: 5.6765
Min Variance: 1.85e-05
p1=0.246, p2=0.226
--- Iter [1380/2000] ---
Total Loss: 1353.1599
MSE Component: 1.3483 (Weighted: 1348.2504)
NLL Component: 4.8220
Min Variance: 2.27e-05
p1=0.246, p2=0.226

--- Validation at iteration 1380 ---
Average MSE: 245.2112, Average ANEES: 327.1545
-----
--- Iter [1381/2000] ---
Total Loss: 1879.3225
MSE Component: 1.8726 (Weighted: 1872.6131)
NLL Component: 6.6220

```

```

Min Variance: 7.48e-06
p1=0.246, p2=0.226
--- Iter [1382/2000] ---
Total Loss: 1348.8153
MSE Component: 1.3429 (Weighted: 1342.8987)
NLL Component: 5.8291
Min Variance: 8.10e-06
p1=0.246, p2=0.226
--- Iter [1383/2000] ---
Total Loss: 1648.2006
MSE Component: 1.6392 (Weighted: 1639.1779)
NLL Component: 8.9351
Min Variance: 8.36e-06
p1=0.246, p2=0.226
--- Iter [1384/2000] ---
Total Loss: 1437.1979
MSE Component: 1.4300 (Weighted: 1430.0253)
NLL Component: 7.0850
Min Variance: 1.63e-05
p1=0.246, p2=0.226
--- Iter [1385/2000] ---
Total Loss: 1272.9027
MSE Component: 1.2664 (Weighted: 1266.3763)
NLL Component: 6.4389
Min Variance: 1.52e-05
p1=0.245, p2=0.226
--- Iter [1386/2000] ---
Total Loss: 1494.9954
MSE Component: 1.4858 (Weighted: 1485.8208)
NLL Component: 9.0870
Min Variance: 1.54e-05
p1=0.245, p2=0.226
--- Iter [1387/2000] ---
Total Loss: 1799.3297
MSE Component: 1.7931 (Weighted: 1793.0746)
NLL Component: 6.1676
Min Variance: 1.39e-05
p1=0.245, p2=0.226
--- Iter [1388/2000] ---
Total Loss: 1828.1854
MSE Component: 1.8215 (Weighted: 1821.5357)
NLL Component: 6.5621
Min Variance: 2.41e-05
p1=0.245, p2=0.226
--- Iter [1389/2000] ---
Total Loss: 2041.4124
MSE Component: 2.0362 (Weighted: 2036.1521)
NLL Component: 5.1727

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    Min Variance: 1.24e-05
    p1=0.245, p2=0.226
--- Iter [1390/2000] ---
    Total Loss: 1766.1780
    MSE Component: 1.7591 (Weighted: 1759.1014)
    NLL Component: 6.9890
    Min Variance: 1.52e-05
    p1=0.245, p2=0.226

--- Validation at iteration 1390 ---
    Average MSE: 282.0817, Average ANEES: 328.5463
-----
--- Iter [1391/2000] ---
    Total Loss: 1590.1118
    MSE Component: 1.5829 (Weighted: 1582.8910)
    NLL Component: 7.1333
    Min Variance: 2.81e-05
    p1=0.245, p2=0.226
--- Iter [1392/2000] ---
    Total Loss: 1188.8429
    MSE Component: 1.1813 (Weighted: 1181.2788)
    NLL Component: 7.4767
    Min Variance: 1.16e-05
    p1=0.245, p2=0.226
--- Iter [1393/2000] ---
    Total Loss: 1311.4438
    MSE Component: 1.3035 (Weighted: 1303.4766)
    NLL Component: 7.8799
    Min Variance: 8.90e-06
    p1=0.245, p2=0.226
--- Iter [1394/2000] ---
    Total Loss: 1668.6613
    MSE Component: 1.6630 (Weighted: 1662.9648)
    NLL Component: 5.6090
    Min Variance: 1.08e-05
    p1=0.245, p2=0.226
--- Iter [1395/2000] ---
    Total Loss: 2274.2737
    MSE Component: 2.2661 (Weighted: 2266.1052)
    NLL Component: 8.0811
    Min Variance: 1.40e-05
    p1=0.245, p2=0.226
--- Iter [1396/2000] ---
    Total Loss: 1801.8298
    MSE Component: 1.7946 (Weighted: 1794.6228)
    NLL Component: 7.1197
    Min Variance: 7.67e-06
    p1=0.245, p2=0.226

```

```

--- Iter [1397/2000] ---
Total Loss: 1990.5944
MSE Component: 1.9841 (Weighted: 1984.0536)
NLL Component: 6.4533
Min Variance: 1.32e-05
p1=0.245, p2=0.226
--- Iter [1398/2000] ---
Total Loss: 1228.5153
MSE Component: 1.2225 (Weighted: 1222.4858)
NLL Component: 5.9420
Min Variance: 7.14e-06
p1=0.245, p2=0.226
--- Iter [1399/2000] ---
Total Loss: 1428.9537
MSE Component: 1.4223 (Weighted: 1422.3144)
NLL Component: 6.5519
Min Variance: 1.30e-05
p1=0.245, p2=0.226
--- Iter [1400/2000] ---
Total Loss: 1335.0413
MSE Component: 1.3300 (Weighted: 1330.0492)
NLL Component: 4.9046
Min Variance: 2.17e-05
p1=0.245, p2=0.226

--- Validation at iteration 1400 ---
Average MSE: 268.2328, Average ANEES: 317.5333
-----
--- Iter [1401/2000] ---
Total Loss: 1498.8779
MSE Component: 1.4925 (Weighted: 1492.5174)
NLL Component: 6.2731
Min Variance: 1.70e-05
p1=0.245, p2=0.226
--- Iter [1402/2000] ---
Total Loss: 2346.3818
MSE Component: 2.3396 (Weighted: 2339.6409)
NLL Component: 6.6535
Min Variance: 1.42e-05
p1=0.245, p2=0.226
--- Iter [1403/2000] ---
Total Loss: 2586.7861
MSE Component: 2.5797 (Weighted: 2579.7439)
NLL Component: 6.9547
Min Variance: 1.56e-05
p1=0.245, p2=0.226
--- Iter [1404/2000] ---
Total Loss: 2722.3579

```

```

MSE Component: 2.7138 (Weighted: 2713.8252)
NLL Component: 8.4453
Min Variance: 1.38e-05
p1=0.245, p2=0.226
--- Iter [1405/2000] ---
Total Loss: 2156.2332
MSE Component: 2.1515 (Weighted: 2151.4745)
NLL Component: 4.6714
Min Variance: 7.46e-06
p1=0.245, p2=0.226
--- Iter [1406/2000] ---
Total Loss: 2830.7463
MSE Component: 2.8241 (Weighted: 2824.1403)
NLL Component: 6.5186
Min Variance: 7.66e-06
p1=0.245, p2=0.226
--- Iter [1407/2000] ---
Total Loss: 2964.0410
MSE Component: 2.9564 (Weighted: 2956.3756)
NLL Component: 7.5780
Min Variance: 1.11e-05
p1=0.245, p2=0.226
--- Iter [1408/2000] ---
Total Loss: 1955.2805
MSE Component: 1.9511 (Weighted: 1951.1459)
NLL Component: 4.0472
Min Variance: 2.59e-05
p1=0.245, p2=0.226
--- Iter [1409/2000] ---
Total Loss: 1201.2068
MSE Component: 1.1942 (Weighted: 1194.2283)
NLL Component: 6.8912
Min Variance: 2.14e-05
p1=0.245, p2=0.226
--- Iter [1410/2000] ---
Total Loss: 1376.7061
MSE Component: 1.3684 (Weighted: 1368.3945)
NLL Component: 8.2241
Min Variance: 1.16e-05
p1=0.245, p2=0.226

--- Validation at iteration 1410 ---
Average MSE: 246.0851, Average ANEES: 402.0652
-----
--- Iter [1411/2000] ---
Total Loss: 1638.9253
MSE Component: 1.6321 (Weighted: 1632.1115)
NLL Component: 6.7263

```

```

Min Variance: 1.37e-05
p1=0.245, p2=0.226
--- Iter [1412/2000] ---
Total Loss: 1891.8046
MSE Component: 1.8844 (Weighted: 1884.4296)
NLL Component: 7.2876
Min Variance: 9.41e-06
p1=0.245, p2=0.226
--- Iter [1413/2000] ---
Total Loss: 2878.6064
MSE Component: 2.8714 (Weighted: 2871.4170)
NLL Component: 7.1022
Min Variance: 2.31e-05
p1=0.245, p2=0.226
--- Iter [1414/2000] ---
Total Loss: 3086.1321
MSE Component: 3.0782 (Weighted: 3078.2413)
NLL Component: 7.8032
Min Variance: 1.08e-05
p1=0.245, p2=0.226
--- Iter [1415/2000] ---
Total Loss: 3360.1870
MSE Component: 3.3528 (Weighted: 3352.7770)
NLL Component: 7.3225
Min Variance: 1.49e-05
p1=0.245, p2=0.226
--- Iter [1416/2000] ---
Total Loss: 1842.4321
MSE Component: 1.8349 (Weighted: 1834.8873)
NLL Component: 7.4576
Min Variance: 1.92e-05
p1=0.245, p2=0.226
--- Iter [1417/2000] ---
Total Loss: 2604.0798
MSE Component: 2.5970 (Weighted: 2597.0263)
NLL Component: 6.9662
Min Variance: 8.62e-06
p1=0.245, p2=0.226
--- Iter [1418/2000] ---
Total Loss: 1906.8954
MSE Component: 1.9004 (Weighted: 1900.4186)
NLL Component: 6.3894
Min Variance: 1.14e-05
p1=0.245, p2=0.226
--- Iter [1419/2000] ---
Total Loss: 2306.3787
MSE Component: 2.2983 (Weighted: 2298.2950)
NLL Component: 7.9963

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    Min Variance: 7.32e-06
    p1=0.245, p2=0.226
--- Iter [1420/2000] ---
    Total Loss: 1690.0928
    MSE Component: 1.6834 (Weighted: 1683.3751)
    NLL Component: 6.6302
    Min Variance: 8.65e-06
    p1=0.245, p2=0.226

--- Validation at iteration 1420 ---
    Average MSE: 262.8923, Average ANEES: 310.6575
-----
--- Iter [1421/2000] ---
    Total Loss: 1584.9132
    MSE Component: 1.5789 (Weighted: 1578.9074)
    NLL Component: 5.9184
    Min Variance: 7.60e-06
    p1=0.245, p2=0.226
--- Iter [1422/2000] ---
    Total Loss: 2147.9673
    MSE Component: 2.1430 (Weighted: 2142.9882)
    NLL Component: 4.8915
    Min Variance: 8.74e-06
    p1=0.245, p2=0.226
--- Iter [1423/2000] ---
    Total Loss: 2188.7314
    MSE Component: 2.1831 (Weighted: 2183.1114)
    NLL Component: 5.5326
    Min Variance: 2.50e-05
    p1=0.245, p2=0.226
--- Iter [1424/2000] ---
    Total Loss: 2188.8831
    MSE Component: 2.1826 (Weighted: 2182.6398)
    NLL Component: 6.1557
    Min Variance: 3.11e-05
    p1=0.245, p2=0.226
--- Iter [1425/2000] ---
    Total Loss: 2976.5876
    MSE Component: 2.9678 (Weighted: 2967.7963)
    NLL Component: 8.7038
    Min Variance: 2.74e-05
    p1=0.245, p2=0.226
--- Iter [1426/2000] ---
    Total Loss: 2036.8175
    MSE Component: 2.0316 (Weighted: 2031.6083)
    NLL Component: 5.1217
    Min Variance: 1.12e-05
    p1=0.245, p2=0.226

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--- Iter [1427/2000] ---
Total Loss: 1113.4806
MSE Component: 1.1077 (Weighted: 1107.7194)
NLL Component: 5.6737
Min Variance: 2.03e-05
p1=0.245, p2=0.226
--- Iter [1428/2000] ---
Total Loss: 1301.6724
MSE Component: 1.2964 (Weighted: 1296.3896)
NLL Component: 5.1955
Min Variance: 1.17e-05
p1=0.245, p2=0.226
--- Iter [1429/2000] ---
Total Loss: 2000.5497
MSE Component: 1.9922 (Weighted: 1992.2034)
NLL Component: 8.2589
Min Variance: 1.07e-05
p1=0.245, p2=0.226
--- Iter [1430/2000] ---
Total Loss: 1842.7599
MSE Component: 1.8371 (Weighted: 1837.1497)
NLL Component: 5.5227
Min Variance: 1.08e-05
p1=0.245, p2=0.226

--- Validation at iteration 1430 ---
Average MSE: 246.1793, Average ANEES: 300.8818
-----
--- Iter [1431/2000] ---
Total Loss: 1944.9137
MSE Component: 1.9386 (Weighted: 1938.5971)
NLL Component: 6.2293
Min Variance: 1.47e-05
p1=0.245, p2=0.226
--- Iter [1432/2000] ---
Total Loss: 1513.5815
MSE Component: 1.5076 (Weighted: 1507.5817)
NLL Component: 5.9125
Min Variance: 5.41e-06
p1=0.245, p2=0.226
--- Iter [1433/2000] ---
Total Loss: 1549.7244
MSE Component: 1.5438 (Weighted: 1543.7719)
NLL Component: 5.8651
Min Variance: 1.20e-05
p1=0.245, p2=0.226
--- Iter [1434/2000] ---
Total Loss: 1560.7942

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MSE Component: 1.5530 (Weighted: 1552.9896)
NLL Component: 7.7172
Min Variance: 2.34e-05
p1=0.245, p2=0.226
--- Iter [1435/2000] ---
Total Loss: 1225.4862
MSE Component: 1.2187 (Weighted: 1218.7202)
NLL Component: 6.6786
Min Variance: 1.03e-05
p1=0.245, p2=0.226
--- Iter [1436/2000] ---
Total Loss: 1228.1576
MSE Component: 1.2220 (Weighted: 1221.9620)
NLL Component: 6.1083
Min Variance: 2.20e-05
p1=0.245, p2=0.226
--- Iter [1437/2000] ---
Total Loss: 1572.1069
MSE Component: 1.5664 (Weighted: 1566.4166)
NLL Component: 5.6029
Min Variance: 1.74e-05
p1=0.245, p2=0.226
--- Iter [1438/2000] ---
Total Loss: 2968.5632
MSE Component: 2.9632 (Weighted: 2963.1927)
NLL Component: 5.2832
Min Variance: 1.99e-05
p1=0.245, p2=0.226
--- Iter [1439/2000] ---
Total Loss: 2273.5762
MSE Component: 2.2676 (Weighted: 2267.6046)
NLL Component: 5.8842
Min Variance: 1.16e-05
p1=0.245, p2=0.226
--- Iter [1440/2000] ---
Total Loss: 1297.3198
MSE Component: 1.2912 (Weighted: 1291.2306)
NLL Component: 6.0018
Min Variance: 1.81e-05
p1=0.245, p2=0.226

--- Validation at iteration 1440 ---
Average MSE: 255.3219, Average ANEES: 242.9697
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [1441/2000] ---
Total Loss: 1470.1575
MSE Component: 1.4637 (Weighted: 1463.6557)

```

```

NLL Component: 6.4143
Min Variance: 7.77e-06
p1=0.245, p2=0.226
--- Iter [1442/2000] ---
Total Loss: 1110.9323
MSE Component: 1.1066 (Weighted: 1106.5737)
NLL Component: 4.2711
Min Variance: 8.51e-06
p1=0.245, p2=0.226
--- Iter [1443/2000] ---
Total Loss: 1593.1899
MSE Component: 1.5858 (Weighted: 1585.8045)
NLL Component: 7.2981
Min Variance: 2.11e-05
p1=0.245, p2=0.226
--- Iter [1444/2000] ---
Total Loss: 2204.9231
MSE Component: 2.1969 (Weighted: 2196.8732)
NLL Component: 7.9623
Min Variance: 8.51e-06
p1=0.245, p2=0.226
--- Iter [1445/2000] ---
Total Loss: 2672.3098
MSE Component: 2.6641 (Weighted: 2664.0699)
NLL Component: 8.1526
Min Variance: 9.14e-06
p1=0.245, p2=0.226
--- Iter [1446/2000] ---
Total Loss: 3088.9744
MSE Component: 3.0816 (Weighted: 3081.6405)
NLL Component: 7.2466
Min Variance: 9.20e-06
p1=0.245, p2=0.226
--- Iter [1447/2000] ---
Total Loss: 2512.2234
MSE Component: 2.5044 (Weighted: 2504.4141)
NLL Component: 7.7219
Min Variance: 1.77e-05
p1=0.245, p2=0.226
--- Iter [1448/2000] ---
Total Loss: 1851.9711
MSE Component: 1.8424 (Weighted: 1842.3688)
NLL Component: 9.5147
Min Variance: 9.69e-06
p1=0.245, p2=0.226
--- Iter [1449/2000] ---
Total Loss: 2656.4863
MSE Component: 2.6488 (Weighted: 2648.7701)

```

```

    NLL Component: 7.6288
    Min Variance: 7.29e-06
    p1=0.245, p2=0.226
--- Iter [1450/2000] ---
    Total Loss: 1479.9414
    MSE Component: 1.4754 (Weighted: 1475.4366)
    NLL Component: 4.4174
    Min Variance: 8.86e-06
    p1=0.245, p2=0.226

--- Validation at iteration 1450 ---
    Average MSE: 247.9010, Average ANEES: 319.7101
-----
--- Iter [1451/2000] ---
    Total Loss: 1552.0609
    MSE Component: 1.5462 (Weighted: 1546.1665)
    NLL Component: 5.8070
    Min Variance: 1.40e-05
    p1=0.245, p2=0.226
--- Iter [1452/2000] ---
    Total Loss: 2340.7231
    MSE Component: 2.3329 (Weighted: 2332.8655)
    NLL Component: 7.7702
    Min Variance: 1.15e-05
    p1=0.245, p2=0.226
--- Iter [1453/2000] ---
    Total Loss: 1815.4004
    MSE Component: 1.8095 (Weighted: 1809.5311)
    NLL Component: 5.7819
    Min Variance: 2.10e-05
    p1=0.245, p2=0.226
--- Iter [1454/2000] ---
    Total Loss: 1988.5447
    MSE Component: 1.9828 (Weighted: 1982.8244)
    NLL Component: 5.6328
    Min Variance: 1.99e-05
    p1=0.245, p2=0.226
--- Iter [1455/2000] ---
    Total Loss: 2081.7373
    MSE Component: 2.0745 (Weighted: 2074.4741)
    NLL Component: 7.1757
    Min Variance: 3.37e-05
    p1=0.245, p2=0.226
--- Iter [1456/2000] ---
    Total Loss: 1426.9995
    MSE Component: 1.4217 (Weighted: 1421.7103)
    NLL Component: 5.2019
    Min Variance: 9.30e-06

```

```

    p1=0.245, p2=0.226
--- Iter [1457/2000] ---
    Total Loss: 2000.6586
    MSE Component: 1.9966 (Weighted: 1996.5873)
    NLL Component: 3.9839
    Min Variance: 2.29e-05
    p1=0.245, p2=0.226
--- Iter [1458/2000] ---
    Total Loss: 1977.1141
    MSE Component: 1.9707 (Weighted: 1970.6956)
    NLL Component: 6.3312
    Min Variance: 9.12e-06
    p1=0.245, p2=0.226
--- Iter [1459/2000] ---
    Total Loss: 1463.6101
    MSE Component: 1.4579 (Weighted: 1457.8980)
    NLL Component: 5.6246
    Min Variance: 1.52e-05
    p1=0.245, p2=0.226
--- Iter [1460/2000] ---
    Total Loss: 1364.6116
    MSE Component: 1.3577 (Weighted: 1357.7451)
    NLL Component: 6.7792
    Min Variance: 1.39e-05
    p1=0.245, p2=0.226

--- Validation at iteration 1460 ---
    Average MSE: 257.6984, Average ANEES: 260.3833
-----
--- Iter [1461/2000] ---
    Total Loss: 1718.2565
    MSE Component: 1.7105 (Weighted: 1710.5154)
    NLL Component: 7.6537
    Min Variance: 5.80e-06
    p1=0.245, p2=0.226
--- Iter [1462/2000] ---
    Total Loss: 2094.4119
    MSE Component: 2.0886 (Weighted: 2088.6114)
    NLL Component: 5.7131
    Min Variance: 1.00e-05
    p1=0.245, p2=0.226
--- Iter [1463/2000] ---
    Total Loss: 1931.7466
    MSE Component: 1.9239 (Weighted: 1923.8969)
    NLL Component: 7.7623
    Min Variance: 7.60e-06
    p1=0.245, p2=0.226
--- Iter [1464/2000] ---

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```

Total Loss: 1917.7096
MSE Component: 1.9060 (Weighted: 1906.0193)
NLL Component: 11.6029
Min Variance: 1.97e-05
p1=0.245, p2=0.226
--- Iter [1465/2000] ---
Total Loss: 2283.4763
MSE Component: 2.2762 (Weighted: 2276.2358)
NLL Component: 7.1531
Min Variance: 1.49e-05
p1=0.245, p2=0.226
--- Iter [1466/2000] ---
Total Loss: 2241.3833
MSE Component: 2.2359 (Weighted: 2235.8673)
NLL Component: 5.4288
Min Variance: 1.07e-05
p1=0.245, p2=0.226
--- Iter [1467/2000] ---
Total Loss: 1896.2189
MSE Component: 1.8874 (Weighted: 1887.3502)
NLL Component: 8.7812
Min Variance: 9.33e-06
p1=0.245, p2=0.226
--- Iter [1468/2000] ---
Total Loss: 1399.5316
MSE Component: 1.3921 (Weighted: 1392.1001)
NLL Component: 7.3441
Min Variance: 1.11e-05
p1=0.245, p2=0.226
--- Iter [1469/2000] ---
Total Loss: 1781.1823
MSE Component: 1.7746 (Weighted: 1774.5610)
NLL Component: 6.5338
Min Variance: 1.71e-05
p1=0.245, p2=0.226
--- Iter [1470/2000] ---
Total Loss: 2313.4805
MSE Component: 2.3095 (Weighted: 2309.5429)
NLL Component: 3.8501
Min Variance: 2.56e-05
p1=0.245, p2=0.225

--- Validation at iteration 1470 ---
Average MSE: 259.2405, Average ANEES: 343.2393
-----
--- Iter [1471/2000] ---
Total Loss: 1394.9739
MSE Component: 1.3881 (Weighted: 1388.1029)

```

```

NLL Component: 6.7835
Min Variance: 1.84e-05
p1=0.245, p2=0.225
--- Iter [1472/2000] ---
Total Loss: 1806.9059
MSE Component: 1.7994 (Weighted: 1799.4425)
NLL Component: 7.3759
Min Variance: 3.61e-06
p1=0.245, p2=0.225
--- Iter [1473/2000] ---
Total Loss: 2340.2893
MSE Component: 2.3345 (Weighted: 2334.5253)
NLL Component: 5.6766
Min Variance: 1.25e-05
p1=0.245, p2=0.225
--- Iter [1474/2000] ---
Total Loss: 2186.1135
MSE Component: 2.1809 (Weighted: 2180.9239)
NLL Component: 5.1022
Min Variance: 4.55e-06
p1=0.245, p2=0.225
--- Iter [1475/2000] ---
Total Loss: 1497.5394
MSE Component: 1.4923 (Weighted: 1492.3354)
NLL Component: 5.1166
Min Variance: 1.94e-05
p1=0.245, p2=0.225
--- Iter [1476/2000] ---
Total Loss: 1319.1826
MSE Component: 1.3146 (Weighted: 1314.6293)
NLL Component: 4.4660
Min Variance: 3.70e-05
p1=0.245, p2=0.225
--- Iter [1477/2000] ---
Total Loss: 1726.0349
MSE Component: 1.7194 (Weighted: 1719.3514)
NLL Component: 6.5961
Min Variance: 1.15e-05
p1=0.244, p2=0.225
--- Iter [1478/2000] ---
Total Loss: 1835.9700
MSE Component: 1.8322 (Weighted: 1832.1702)
NLL Component: 3.7123
Min Variance: 6.10e-06
p1=0.244, p2=0.225
--- Iter [1479/2000] ---
Total Loss: 2516.4053
MSE Component: 2.5095 (Weighted: 2509.5427)

```

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    NLL Component: 6.7751
    Min Variance: 8.00e-06
    p1=0.244, p2=0.225
--- Iter [1480/2000] ---
    Total Loss: 1819.6400
    MSE Component: 1.8113 (Weighted: 1811.3365)
    NLL Component: 8.2161
    Min Variance: 1.64e-05
    p1=0.244, p2=0.225

--- Validation at iteration 1480 ---
    Average MSE: 258.3401, Average ANEES: 262.0510
-----
--- Iter [1481/2000] ---
    Total Loss: 1730.6721
    MSE Component: 1.7246 (Weighted: 1724.5673)
    NLL Component: 6.0175
    Min Variance: 1.25e-05
    p1=0.244, p2=0.225
--- Iter [1482/2000] ---
    Total Loss: 2029.1206
    MSE Component: 2.0199 (Weighted: 2019.8593)
    NLL Component: 9.1739
    Min Variance: 8.01e-06
    p1=0.244, p2=0.225
--- Iter [1483/2000] ---
    Total Loss: 2552.4551
    MSE Component: 2.5466 (Weighted: 2546.6096)
    NLL Component: 5.7581
    Min Variance: 1.39e-05
    p1=0.244, p2=0.225
--- Iter [1484/2000] ---
    Total Loss: 2052.7263
    MSE Component: 2.0434 (Weighted: 2043.4442)
    NLL Component: 9.1948
    Min Variance: 1.25e-05
    p1=0.244, p2=0.225
--- Iter [1485/2000] ---
    Total Loss: 1518.3092
    MSE Component: 1.5126 (Weighted: 1512.6364)
    NLL Component: 5.5853
    Min Variance: 8.36e-06
    p1=0.244, p2=0.225
--- Iter [1486/2000] ---
    Total Loss: 1698.1456
    MSE Component: 1.6903 (Weighted: 1690.3398)
    NLL Component: 7.7184
    Min Variance: 1.52e-05

```



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    p1=0.244, p2=0.225
--- Iter [1487/2000] ---
    Total Loss: 2321.9993
    MSE Component: 2.3162 (Weighted: 2316.1898)
    NLL Component: 5.7221
    Min Variance: 1.12e-05
    p1=0.244, p2=0.225
--- Iter [1488/2000] ---
    Total Loss: 2303.3401
    MSE Component: 2.2975 (Weighted: 2297.4715)
    NLL Component: 5.7813
    Min Variance: 2.43e-05
    p1=0.244, p2=0.225
--- Iter [1489/2000] ---
    Total Loss: 2358.6770
    MSE Component: 2.3537 (Weighted: 2353.7385)
    NLL Component: 4.8511
    Min Variance: 1.28e-05
    p1=0.244, p2=0.225
--- Iter [1490/2000] ---
    Total Loss: 1642.8082
    MSE Component: 1.6375 (Weighted: 1637.5228)
    NLL Component: 5.1980
    Min Variance: 8.13e-06
    p1=0.244, p2=0.225

--- Validation at iteration 1490 ---
    Average MSE: 252.7287, Average ANEES: 323.2602
-----
--- Iter [1491/2000] ---
    Total Loss: 1552.5402
    MSE Component: 1.5473 (Weighted: 1547.2596)
    NLL Component: 5.1932
    Min Variance: 1.85e-05
    p1=0.244, p2=0.225
--- Iter [1492/2000] ---
    Total Loss: 1547.6075
    MSE Component: 1.5420 (Weighted: 1541.9797)
    NLL Component: 5.5405
    Min Variance: 8.92e-06
    p1=0.244, p2=0.225
--- Iter [1493/2000] ---
    Total Loss: 1852.5092
    MSE Component: 1.8451 (Weighted: 1845.1422)
    NLL Component: 7.2795
    Min Variance: 1.47e-05
    p1=0.244, p2=0.225
--- Iter [1494/2000] ---

```

```

Total Loss: 1384.3990
MSE Component: 1.3768 (Weighted: 1376.8454)
NLL Component: 7.4663
Min Variance: 9.41e-06
p1=0.244, p2=0.225
--- Iter [1495/2000] ---
Total Loss: 1391.3075
MSE Component: 1.3840 (Weighted: 1384.0238)
NLL Component: 7.1962
Min Variance: 6.55e-06
p1=0.244, p2=0.225
--- Iter [1496/2000] ---
Total Loss: 2128.4126
MSE Component: 2.1218 (Weighted: 2121.8190)
NLL Component: 6.5060
Min Variance: 1.36e-05
p1=0.244, p2=0.225
--- Iter [1497/2000] ---
Total Loss: 1812.1418
MSE Component: 1.8062 (Weighted: 1806.2352)
NLL Component: 5.8192
Min Variance: 1.69e-05
p1=0.244, p2=0.225
--- Iter [1498/2000] ---
Total Loss: 1934.5945
MSE Component: 1.9289 (Weighted: 1928.9113)
NLL Component: 5.5957
Min Variance: 9.26e-06
p1=0.244, p2=0.225
--- Iter [1499/2000] ---
Total Loss: 2376.9761
MSE Component: 2.3703 (Weighted: 2370.2610)
NLL Component: 6.6277
Min Variance: 6.07e-06
p1=0.244, p2=0.225
--- Iter [1500/2000] ---
Total Loss: 1947.4365
MSE Component: 1.9410 (Weighted: 1940.9713)
NLL Component: 6.3778
Min Variance: 7.94e-06
p1=0.244, p2=0.225

--- Validation at iteration 1500 ---
Average MSE: 264.6550, Average ANEES: 243.4066
-----
--- Iter [1501/2000] ---
Total Loss: 1456.3308
MSE Component: 1.4506 (Weighted: 1450.6484)

```

```

NLL Component: 5.5949
Min Variance: 1.14e-05
p1=0.244, p2=0.225
--- Iter [1502/2000] ---
Total Loss: 1952.4147
MSE Component: 1.9461 (Weighted: 1946.0589)
NLL Component: 6.2684
Min Variance: 1.91e-05
p1=0.244, p2=0.225
--- Iter [1503/2000] ---
Total Loss: 1429.8615
MSE Component: 1.4239 (Weighted: 1423.8619)
NLL Component: 5.9122
Min Variance: 1.66e-05
p1=0.244, p2=0.225
--- Iter [1504/2000] ---
Total Loss: 1729.9264
MSE Component: 1.7243 (Weighted: 1724.2955)
NLL Component: 5.5435
Min Variance: 1.78e-05
p1=0.244, p2=0.225
--- Iter [1505/2000] ---
Total Loss: 1226.5070
MSE Component: 1.2199 (Weighted: 1219.8756)
NLL Component: 6.5439
Min Variance: 1.82e-05
p1=0.244, p2=0.225
--- Iter [1506/2000] ---
Total Loss: 1460.7118
MSE Component: 1.4533 (Weighted: 1453.2753)
NLL Component: 7.3492
Min Variance: 1.91e-05
p1=0.244, p2=0.225
--- Iter [1507/2000] ---
Total Loss: 1602.0526
MSE Component: 1.5966 (Weighted: 1596.6233)
NLL Component: 5.3419
Min Variance: 1.32e-05
p1=0.244, p2=0.225
--- Iter [1508/2000] ---
Total Loss: 1619.7603
MSE Component: 1.6143 (Weighted: 1614.2936)
NLL Component: 5.3793
Min Variance: 1.17e-05
p1=0.244, p2=0.225
--- Iter [1509/2000] ---
Total Loss: 1346.6934
MSE Component: 1.3425 (Weighted: 1342.5065)

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```

    NLL Component: 4.0995
    Min Variance: 2.17e-05
    p1=0.244, p2=0.225
--- Iter [1510/2000] ---
    Total Loss: 1291.8351
    MSE Component: 1.2865 (Weighted: 1286.4972)
    NLL Component: 5.2505
    Min Variance: 1.06e-05
    p1=0.244, p2=0.225

--- Validation at iteration 1510 ---
    Average MSE: 240.6947, Average ANEES: 252.4215
-----
--- Iter [1511/2000] ---
    Total Loss: 1354.0708
    MSE Component: 1.3454 (Weighted: 1345.4499)
    NLL Component: 8.5335
    Min Variance: 1.49e-05
    p1=0.244, p2=0.225
--- Iter [1512/2000] ---
    Total Loss: 1248.0676
    MSE Component: 1.2425 (Weighted: 1242.4694)
    NLL Component: 5.5108
    Min Variance: 1.95e-05
    p1=0.244, p2=0.225
--- Iter [1513/2000] ---
    Total Loss: 1264.6119
    MSE Component: 1.2582 (Weighted: 1258.1915)
    NLL Component: 6.3331
    Min Variance: 1.36e-05
    p1=0.244, p2=0.225
--- Iter [1514/2000] ---
    Total Loss: 1823.5753
    MSE Component: 1.8190 (Weighted: 1818.9527)
    NLL Component: 4.5353
    Min Variance: 9.97e-06
    p1=0.244, p2=0.225
--- Iter [1515/2000] ---
    Total Loss: 1745.3373
    MSE Component: 1.7390 (Weighted: 1739.0065)
    NLL Component: 6.2434
    Min Variance: 1.25e-05
    p1=0.244, p2=0.225
--- Iter [1516/2000] ---
    Total Loss: 1590.0549
    MSE Component: 1.5845 (Weighted: 1584.4529)
    NLL Component: 5.5147
    Min Variance: 2.12e-05

```

```

    p1=0.244, p2=0.225
--- Iter [1517/2000] ---
    Total Loss: 1556.0004
    MSE Component: 1.5480 (Weighted: 1548.0002)
    NLL Component: 7.9127
    Min Variance: 1.57e-05
    p1=0.244, p2=0.225
--- Iter [1518/2000] ---
    Total Loss: 1907.0839
    MSE Component: 1.9015 (Weighted: 1901.5090)
    NLL Component: 5.4874
    Min Variance: 1.66e-05
    p1=0.244, p2=0.225
--- Iter [1519/2000] ---
    Total Loss: 1393.6884
    MSE Component: 1.3888 (Weighted: 1388.7728)
    NLL Component: 4.8281
    Min Variance: 1.13e-05
    p1=0.244, p2=0.225
--- Iter [1520/2000] ---
    Total Loss: 1452.5463
    MSE Component: 1.4429 (Weighted: 1442.9214)
    NLL Component: 9.5375
    Min Variance: 9.64e-06
    p1=0.244, p2=0.225

--- Validation at iteration 1520 ---
    Average MSE: 261.5811, Average ANEES: 259.8474
-----
--- Iter [1521/2000] ---
    Total Loss: 1255.8975
    MSE Component: 1.2517 (Weighted: 1251.7364)
    NLL Component: 4.0736
    Min Variance: 1.32e-05
    p1=0.244, p2=0.225
--- Iter [1522/2000] ---
    Total Loss: 1250.5796
    MSE Component: 1.2452 (Weighted: 1245.2393)
    NLL Component: 5.2529
    Min Variance: 2.98e-05
    p1=0.244, p2=0.225
--- Iter [1523/2000] ---
    Total Loss: 1415.2506
    MSE Component: 1.4106 (Weighted: 1410.6406)
    NLL Component: 4.5226
    Min Variance: 2.15e-05
    p1=0.244, p2=0.225
--- Iter [1524/2000] ---

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```

Total Loss: 1490.8801
MSE Component: 1.4857 (Weighted: 1485.6974)
NLL Component: 5.0954
Min Variance: 6.44e-06
p1=0.244, p2=0.225
--- Iter [1525/2000] ---
Total Loss: 1361.0869
MSE Component: 1.3552 (Weighted: 1355.1910)
NLL Component: 5.8084
Min Variance: 5.58e-06
p1=0.244, p2=0.225
--- Iter [1526/2000] ---
Total Loss: 1239.4186
MSE Component: 1.2347 (Weighted: 1234.6580)
NLL Component: 4.6732
Min Variance: 1.69e-05
p1=0.244, p2=0.225
--- Iter [1527/2000] ---
Total Loss: 1563.5646
MSE Component: 1.5564 (Weighted: 1556.3983)
NLL Component: 7.0789
Min Variance: 1.19e-05
p1=0.244, p2=0.225
--- Iter [1528/2000] ---
Total Loss: 1464.5371
MSE Component: 1.4594 (Weighted: 1459.4270)
NLL Component: 5.0227
Min Variance: 7.37e-06
p1=0.244, p2=0.225
--- Iter [1529/2000] ---
Total Loss: 1481.9568
MSE Component: 1.4736 (Weighted: 1473.6246)
NLL Component: 8.2447
Min Variance: 3.58e-06
p1=0.244, p2=0.225
--- Iter [1530/2000] ---
Total Loss: 1279.3662
MSE Component: 1.2739 (Weighted: 1273.9340)
NLL Component: 5.3449
Min Variance: 8.81e-06
p1=0.244, p2=0.225

--- Validation at iteration 1530 ---
Average MSE: 269.8102, Average ANEES: 242.7757
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [1531/2000] ---
Total Loss: 1419.9894

```

```

MSE Component: 1.4151 (Weighted: 1415.0798)
NLL Component: 4.8221
Min Variance: 7.06e-06
p1=0.244, p2=0.225
--- Iter [1532/2000] ---
Total Loss: 1257.8953
MSE Component: 1.2512 (Weighted: 1251.1828)
NLL Component: 6.6251
Min Variance: 1.65e-05
p1=0.244, p2=0.225
--- Iter [1533/2000] ---
Total Loss: 1509.3583
MSE Component: 1.5016 (Weighted: 1501.6292)
NLL Component: 7.6416
Min Variance: 7.70e-06
p1=0.244, p2=0.225
--- Iter [1534/2000] ---
Total Loss: 1518.4542
MSE Component: 1.5120 (Weighted: 1511.9967)
NLL Component: 6.3701
Min Variance: 4.27e-06
p1=0.244, p2=0.225
--- Iter [1535/2000] ---
Total Loss: 1509.6294
MSE Component: 1.5030 (Weighted: 1502.9805)
NLL Component: 6.5615
Min Variance: 1.02e-05
p1=0.244, p2=0.225
--- Iter [1536/2000] ---
Total Loss: 1463.4858
MSE Component: 1.4584 (Weighted: 1458.4315)
NLL Component: 4.9669
Min Variance: 1.57e-05
p1=0.244, p2=0.225
--- Iter [1537/2000] ---
Total Loss: 1828.1674
MSE Component: 1.8221 (Weighted: 1822.0816)
NLL Component: 5.9984
Min Variance: 6.81e-06
p1=0.244, p2=0.225
--- Iter [1538/2000] ---
Total Loss: 1500.9742
MSE Component: 1.4953 (Weighted: 1495.2844)
NLL Component: 5.6024
Min Variance: 1.63e-05
p1=0.244, p2=0.225
--- Iter [1539/2000] ---
Total Loss: 1302.5983

```

```

MSE Component: 1.2964 (Weighted: 1296.4296)
NLL Component: 6.0812
Min Variance: 1.38e-05
p1=0.244, p2=0.225
--- Iter [1540/2000] ---
Total Loss: 1327.7512
MSE Component: 1.3247 (Weighted: 1324.6980)
NLL Component: 2.9659
Min Variance: 1.92e-05
p1=0.244, p2=0.225

--- Validation at iteration 1540 ---
Average MSE: 245.2355, Average ANEES: 176.5827
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [1541/2000] ---
Total Loss: 1703.6460
MSE Component: 1.6975 (Weighted: 1697.5292)
NLL Component: 6.0295
Min Variance: 1.87e-05
p1=0.244, p2=0.225
--- Iter [1542/2000] ---
Total Loss: 1563.6740
MSE Component: 1.5565 (Weighted: 1556.5355)
NLL Component: 7.0510
Min Variance: 1.65e-05
p1=0.244, p2=0.225
--- Iter [1543/2000] ---
Total Loss: 1864.9492
MSE Component: 1.8600 (Weighted: 1860.0384)
NLL Component: 4.8234
Min Variance: 1.13e-05
p1=0.244, p2=0.225
--- Iter [1544/2000] ---
Total Loss: 1873.5955
MSE Component: 1.8650 (Weighted: 1865.0403)
NLL Component: 8.4678
Min Variance: 8.64e-06
p1=0.244, p2=0.225
--- Iter [1545/2000] ---
Total Loss: 1729.7518
MSE Component: 1.7250 (Weighted: 1724.9628)
NLL Component: 4.7015
Min Variance: 1.26e-05
p1=0.244, p2=0.225
--- Iter [1546/2000] ---
Total Loss: 1488.6211
MSE Component: 1.4834 (Weighted: 1483.3852)

```



```

    NLL Component: 5.1484
    Min Variance: 1.77e-05
    p1=0.244, p2=0.225
--- Iter [1547/2000] ---
    Total Loss: 1431.5358
    MSE Component: 1.4258 (Weighted: 1425.7656)
    NLL Component: 5.6827
    Min Variance: 1.64e-05
    p1=0.243, p2=0.225
--- Iter [1548/2000] ---
    Total Loss: 1867.4222
    MSE Component: 1.8620 (Weighted: 1862.0243)
    NLL Component: 5.3106
    Min Variance: 1.39e-05
    p1=0.243, p2=0.225
--- Iter [1549/2000] ---
    Total Loss: 1251.3105
    MSE Component: 1.2455 (Weighted: 1245.5078)
    NLL Component: 5.7153
    Min Variance: 9.24e-06
    p1=0.243, p2=0.225
--- Iter [1550/2000] ---
    Total Loss: 1375.2910
    MSE Component: 1.3692 (Weighted: 1369.1610)
    NLL Component: 6.0426
    Min Variance: 6.15e-06
    p1=0.243, p2=0.225

--- Validation at iteration 1550 ---
    Average MSE: 263.9750, Average ANEES: 280.8377
-----
--- Iter [1551/2000] ---
    Total Loss: 1557.0155
    MSE Component: 1.5529 (Weighted: 1552.9433)
    NLL Component: 3.9848
    Min Variance: 1.01e-05
    p1=0.243, p2=0.225
--- Iter [1552/2000] ---
    Total Loss: 1577.4918
    MSE Component: 1.5722 (Weighted: 1572.2401)
    NLL Component: 5.1643
    Min Variance: 1.87e-05
    p1=0.243, p2=0.225
--- Iter [1553/2000] ---
    Total Loss: 1420.6619
    MSE Component: 1.4160 (Weighted: 1416.0188)
    NLL Component: 4.5556
    Min Variance: 1.56e-05

```

```

    p1=0.243, p2=0.225
--- Iter [1554/2000] ---
    Total Loss: 2219.5225
    MSE Component: 2.2104 (Weighted: 2210.3837)
    NLL Component: 9.0515
    Min Variance: 2.81e-05
    p1=0.243, p2=0.225
--- Iter [1555/2000] ---
    Total Loss: 1343.1184
    MSE Component: 1.3369 (Weighted: 1336.9212)
    NLL Component: 6.1098
    Min Variance: 1.88e-05
    p1=0.243, p2=0.225
--- Iter [1556/2000] ---
    Total Loss: 1240.0999
    MSE Component: 1.2345 (Weighted: 1234.4724)
    NLL Component: 5.5401
    Min Variance: 1.49e-05
    p1=0.243, p2=0.225
--- Iter [1557/2000] ---
    Total Loss: 1103.8743
    MSE Component: 1.0989 (Weighted: 1098.9107)
    NLL Component: 4.8762
    Min Variance: 1.33e-05
    p1=0.243, p2=0.225
--- Iter [1558/2000] ---
    Total Loss: 1653.8882
    MSE Component: 1.6476 (Weighted: 1647.5861)
    NLL Component: 6.2147
    Min Variance: 1.37e-05
    p1=0.243, p2=0.225
--- Iter [1559/2000] ---
    Total Loss: 1339.9979
    MSE Component: 1.3355 (Weighted: 1335.4651)
    NLL Component: 4.4454
    Min Variance: 1.17e-05
    p1=0.243, p2=0.225
--- Iter [1560/2000] ---
    Total Loss: 1575.8345
    MSE Component: 1.5701 (Weighted: 1570.1027)
    NLL Component: 5.6444
    Min Variance: 1.24e-05
    p1=0.243, p2=0.225

--- Validation at iteration 1560 ---
    Average MSE: 266.9626, Average ANEES: 159.0655
    >>> New best VALIDATION ANEES! Saving model. <<<
-----

```

```

--- Iter [1561/2000] ---
Total Loss: 1260.0804
MSE Component: 1.2552 (Weighted: 1255.1905)
NLL Component: 4.8025
Min Variance: 1.71e-05
p1=0.243, p2=0.225
--- Iter [1562/2000] ---
Total Loss: 1306.0457
MSE Component: 1.3014 (Weighted: 1301.3883)
NLL Component: 4.5699
Min Variance: 1.80e-05
p1=0.243, p2=0.225
--- Iter [1563/2000] ---
Total Loss: 1181.8582
MSE Component: 1.1750 (Weighted: 1175.0253)
NLL Component: 6.7454
Min Variance: 1.55e-05
p1=0.243, p2=0.225
--- Iter [1564/2000] ---
Total Loss: 1186.8618
MSE Component: 1.1810 (Weighted: 1181.0493)
NLL Component: 5.7251
Min Variance: 2.69e-05
p1=0.243, p2=0.225
--- Iter [1565/2000] ---
Total Loss: 1456.2427
MSE Component: 1.4514 (Weighted: 1451.4492)
NLL Component: 4.7062
Min Variance: 1.76e-05
p1=0.243, p2=0.225
--- Iter [1566/2000] ---
Total Loss: 805.2446
MSE Component: 0.8015 (Weighted: 801.4974)
NLL Component: 3.6599
Min Variance: 2.17e-05
p1=0.243, p2=0.225
--- Iter [1567/2000] ---
Total Loss: 1703.2646
MSE Component: 1.6950 (Weighted: 1695.0322)
NLL Component: 8.1451
Min Variance: 1.37e-05
p1=0.243, p2=0.225
--- Iter [1568/2000] ---
Total Loss: 1412.8358
MSE Component: 1.4067 (Weighted: 1406.7199)
NLL Component: 6.0284
Min Variance: 9.63e-06
p1=0.243, p2=0.225

```

```

--- Iter [1569/2000] ---
Total Loss: 1321.4758
MSE Component: 1.3160 (Weighted: 1316.0172)
NLL Component: 5.3713
Min Variance: 1.53e-05
p1=0.243, p2=0.225
--- Iter [1570/2000] ---
Total Loss: 1179.9159
MSE Component: 1.1743 (Weighted: 1174.3047)
NLL Component: 5.5239
Min Variance: 1.14e-05
p1=0.243, p2=0.225

--- Validation at iteration 1570 ---
Average MSE: 278.1866, Average ANEES: 175.4873
-----
--- Iter [1571/2000] ---
Total Loss: 1104.1768
MSE Component: 1.1006 (Weighted: 1100.6457)
NLL Component: 3.4437
Min Variance: 1.61e-05
p1=0.243, p2=0.225
--- Iter [1572/2000] ---
Total Loss: 1110.7345
MSE Component: 1.1068 (Weighted: 1106.8192)
NLL Component: 3.8280
Min Variance: 2.11e-05
p1=0.243, p2=0.225
--- Iter [1573/2000] ---
Total Loss: 1240.5212
MSE Component: 1.2339 (Weighted: 1233.8903)
NLL Component: 6.5437
Min Variance: 2.45e-05
p1=0.243, p2=0.225
--- Iter [1574/2000] ---
Total Loss: 1145.7749
MSE Component: 1.1404 (Weighted: 1140.4080)
NLL Component: 5.2795
Min Variance: 1.97e-05
p1=0.243, p2=0.225
--- Iter [1575/2000] ---
Total Loss: 1353.2736
MSE Component: 1.3490 (Weighted: 1349.0005)
NLL Component: 4.1858
Min Variance: 1.52e-05
p1=0.243, p2=0.225
--- Iter [1576/2000] ---
Total Loss: 1029.4014

```

```

MSE Component: 1.0243 (Weighted: 1024.3077)
NLL Component: 5.0064
Min Variance: 1.56e-05
p1=0.243, p2=0.225
--- Iter [1577/2000] ---
Total Loss: 1368.1619
MSE Component: 1.3626 (Weighted: 1362.5579)
NLL Component: 5.5167
Min Variance: 4.03e-06
p1=0.243, p2=0.225
--- Iter [1578/2000] ---
Total Loss: 1501.8473
MSE Component: 1.4982 (Weighted: 1498.1799)
NLL Component: 3.5801
Min Variance: 1.27e-05
p1=0.243, p2=0.225
--- Iter [1579/2000] ---
Total Loss: 1513.7808
MSE Component: 1.5096 (Weighted: 1509.5638)
NLL Component: 4.1297
Min Variance: 2.33e-05
p1=0.243, p2=0.225
--- Iter [1580/2000] ---
Total Loss: 1196.3394
MSE Component: 1.1923 (Weighted: 1192.2572)
NLL Component: 3.9948
Min Variance: 1.03e-05
p1=0.243, p2=0.225

--- Validation at iteration 1580 ---
Average MSE: 245.4361, Average ANEES: 228.6146
-----
--- Iter [1581/2000] ---
Total Loss: 1197.8234
MSE Component: 1.1909 (Weighted: 1190.8770)
NLL Component: 6.8591
Min Variance: 1.26e-05
p1=0.243, p2=0.225
--- Iter [1582/2000] ---
Total Loss: 1325.6688
MSE Component: 1.3210 (Weighted: 1320.9829)
NLL Component: 4.5987
Min Variance: 1.10e-05
p1=0.243, p2=0.225
--- Iter [1583/2000] ---
Total Loss: 1143.8966
MSE Component: 1.1381 (Weighted: 1138.1052)
NLL Component: 5.7042

```

```

    Min Variance: 7.96e-06
    p1=0.243, p2=0.225
--- Iter [1584/2000] ---
    Total Loss: 1281.2078
    MSE Component: 1.2761 (Weighted: 1276.1254)
    NLL Component: 4.9950
    Min Variance: 5.09e-05
    p1=0.243, p2=0.225
--- Iter [1585/2000] ---
    Total Loss: 1158.2686
    MSE Component: 1.1526 (Weighted: 1152.6303)
    NLL Component: 5.5509
    Min Variance: 1.38e-05
    p1=0.243, p2=0.225
--- Iter [1586/2000] ---
    Total Loss: 1397.1791
    MSE Component: 1.3921 (Weighted: 1392.0920)
    NLL Component: 4.9997
    Min Variance: 2.59e-05
    p1=0.243, p2=0.225
--- Iter [1587/2000] ---
    Total Loss: 1351.2198
    MSE Component: 1.3466 (Weighted: 1346.6421)
    NLL Component: 4.4905
    Min Variance: 1.36e-05
    p1=0.243, p2=0.224
--- Iter [1588/2000] ---
    Total Loss: 1517.7405
    MSE Component: 1.5128 (Weighted: 1512.7819)
    NLL Component: 4.8714
    Min Variance: 4.52e-06
    p1=0.243, p2=0.224
--- Iter [1589/2000] ---
    Total Loss: 1148.4484
    MSE Component: 1.1431 (Weighted: 1143.1310)
    NLL Component: 5.2301
    Min Variance: 1.17e-05
    p1=0.243, p2=0.224
--- Iter [1590/2000] ---
    Total Loss: 1063.3912
    MSE Component: 1.0587 (Weighted: 1058.6727)
    NLL Component: 4.6313
    Min Variance: 1.11e-05
    p1=0.243, p2=0.224

--- Validation at iteration 1590 ---
    Average MSE: 297.1681, Average ANEES: 182.8912
-----

```

```

--- Iter [1591/2000] ---
Total Loss: 914.3772
MSE Component: 0.9099 (Weighted: 909.8679)
NLL Component: 4.4220
Min Variance: 9.91e-06
p1=0.243, p2=0.224
--- Iter [1592/2000] ---
Total Loss: 1026.4343
MSE Component: 1.0216 (Weighted: 1021.6305)
NLL Component: 4.7165
Min Variance: 8.82e-06
p1=0.243, p2=0.224
--- Iter [1593/2000] ---
Total Loss: 1360.7616
MSE Component: 1.3552 (Weighted: 1355.2405)
NLL Component: 5.4339
Min Variance: 1.39e-05
p1=0.243, p2=0.224
--- Iter [1594/2000] ---
Total Loss: 1276.8400
MSE Component: 1.2711 (Weighted: 1271.0730)
NLL Component: 5.6796
Min Variance: 4.47e-06
p1=0.243, p2=0.224
--- Iter [1595/2000] ---
Total Loss: 1261.2998
MSE Component: 1.2547 (Weighted: 1254.6763)
NLL Component: 6.5361
Min Variance: 1.36e-05
p1=0.243, p2=0.224
--- Iter [1596/2000] ---
Total Loss: 1263.2783
MSE Component: 1.2586 (Weighted: 1258.5576)
NLL Component: 4.6334
Min Variance: 1.22e-05
p1=0.243, p2=0.224
--- Iter [1597/2000] ---
Total Loss: 1183.7101
MSE Component: 1.1786 (Weighted: 1178.5508)
NLL Component: 5.0720
Min Variance: 2.77e-05
p1=0.243, p2=0.224
--- Iter [1598/2000] ---
Total Loss: 1264.3792
MSE Component: 1.2591 (Weighted: 1259.0724)
NLL Component: 5.2195
Min Variance: 1.96e-05
p1=0.243, p2=0.224

```

```

--- Iter [1599/2000] ---
Total Loss: 1274.0011
MSE Component: 1.2704 (Weighted: 1270.3867)
NLL Component: 3.5271
Min Variance: 4.32e-06
p1=0.243, p2=0.224
--- Iter [1600/2000] ---
Total Loss: 1049.0203
MSE Component: 1.0438 (Weighted: 1043.8313)
NLL Component: 5.1017
Min Variance: 1.76e-05
p1=0.243, p2=0.224

--- Validation at iteration 1600 ---
Average MSE: 305.7114, Average ANEES: 168.4139
-----
--- Iter [1601/2000] ---
Total Loss: 1217.6373
MSE Component: 1.2136 (Weighted: 1213.5729)
NLL Component: 3.9772
Min Variance: 1.73e-05
p1=0.243, p2=0.224
--- Iter [1602/2000] ---
Total Loss: 1815.3472
MSE Component: 1.8073 (Weighted: 1807.2938)
NLL Component: 7.9661
Min Variance: 1.98e-05
p1=0.243, p2=0.224
--- Iter [1603/2000] ---
Total Loss: 1474.0120
MSE Component: 1.4691 (Weighted: 1469.0907)
NLL Component: 4.8340
Min Variance: 1.76e-05
p1=0.243, p2=0.224
--- Iter [1604/2000] ---
Total Loss: 1163.2074
MSE Component: 1.1580 (Weighted: 1157.9683)
NLL Component: 5.1518
Min Variance: 1.53e-05
p1=0.243, p2=0.224
--- Iter [1605/2000] ---
Total Loss: 1266.4203
MSE Component: 1.2610 (Weighted: 1261.0493)
NLL Component: 5.2837
Min Variance: 4.64e-06
p1=0.243, p2=0.224
--- Iter [1606/2000] ---
Total Loss: 1344.6975

```



```

MSE Component: 1.3397 (Weighted: 1339.7034)
NLL Component: 4.9068
Min Variance: 7.60e-06
p1=0.242, p2=0.224
--- Iter [1607/2000] ---
Total Loss: 1274.2262
MSE Component: 1.2693 (Weighted: 1269.2816)
NLL Component: 4.8573
Min Variance: 1.69e-05
p1=0.242, p2=0.224
--- Iter [1608/2000] ---
Total Loss: 1433.9929
MSE Component: 1.4280 (Weighted: 1428.0313)
NLL Component: 5.8742
Min Variance: 2.97e-05
p1=0.242, p2=0.224
--- Iter [1609/2000] ---
Total Loss: 1290.2699
MSE Component: 1.2848 (Weighted: 1284.7615)
NLL Component: 5.4210
Min Variance: 6.48e-06
p1=0.242, p2=0.224
--- Iter [1610/2000] ---
Total Loss: 1312.1471
MSE Component: 1.3065 (Weighted: 1306.4923)
NLL Component: 5.5675
Min Variance: 2.05e-05
p1=0.242, p2=0.224

--- Validation at iteration 1610 ---
Average MSE: 261.5791, Average ANEES: 178.9387
-----
--- Iter [1611/2000] ---
Total Loss: 1107.4885
MSE Component: 1.1028 (Weighted: 1102.7786)
NLL Component: 4.6227
Min Variance: 7.78e-06
p1=0.242, p2=0.224
--- Iter [1612/2000] ---
Total Loss: 1373.0215
MSE Component: 1.3691 (Weighted: 1369.0568)
NLL Component: 3.8774
Min Variance: 9.25e-06
p1=0.242, p2=0.224
--- Iter [1613/2000] ---
Total Loss: 1232.9126
MSE Component: 1.2249 (Weighted: 1224.9217)
NLL Component: 7.9035

```

```

Min Variance: 9.44e-06
p1=0.242, p2=0.224
--- Iter [1614/2000] ---
Total Loss: 1092.4628
MSE Component: 1.0870 (Weighted: 1086.9683)
NLL Component: 5.4072
Min Variance: 1.41e-05
p1=0.242, p2=0.224
--- Iter [1615/2000] ---
Total Loss: 1509.2126
MSE Component: 1.5025 (Weighted: 1502.5067)
NLL Component: 6.6186
Min Variance: 1.14e-05
p1=0.242, p2=0.224
--- Iter [1616/2000] ---
Total Loss: 1330.0918
MSE Component: 1.3257 (Weighted: 1325.7298)
NLL Component: 4.2746
Min Variance: 2.39e-05
p1=0.242, p2=0.224
--- Iter [1617/2000] ---
Total Loss: 1111.7488
MSE Component: 1.1067 (Weighted: 1106.7410)
NLL Component: 4.9205
Min Variance: 7.03e-06
p1=0.242, p2=0.224
--- Iter [1618/2000] ---
Total Loss: 1385.7858
MSE Component: 1.3816 (Weighted: 1381.5588)
NLL Component: 4.1397
Min Variance: 1.56e-05
p1=0.242, p2=0.224
--- Iter [1619/2000] ---
Total Loss: 975.6407
MSE Component: 0.9718 (Weighted: 971.7934)
NLL Component: 3.7601
Min Variance: 7.92e-06
p1=0.242, p2=0.224
--- Iter [1620/2000] ---
Total Loss: 1012.7784
MSE Component: 1.0086 (Weighted: 1008.5775)
NLL Component: 4.1137
Min Variance: 1.23e-05
p1=0.242, p2=0.224

--- Validation at iteration 1620 ---
Average MSE: 284.1614, Average ANEES: 118.1949
>>> New best VALIDATION ANEES! Saving model. <<<

```

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-----
--- Iter [1621/2000] ---
    Total Loss: 1156.4335
    MSE Component: 1.1535 (Weighted: 1153.4936)
    NLL Component: 2.8525
    Min Variance: 2.37e-05
    p1=0.242, p2=0.224
--- Iter [1622/2000] ---
    Total Loss: 1250.9767
    MSE Component: 1.2453 (Weighted: 1245.3226)
    NLL Component: 5.5667
    Min Variance: 1.67e-05
    p1=0.242, p2=0.224
--- Iter [1623/2000] ---
    Total Loss: 1610.6943
    MSE Component: 1.6037 (Weighted: 1603.6503)
    NLL Component: 6.9567
    Min Variance: 1.18e-05
    p1=0.242, p2=0.224
--- Iter [1624/2000] ---
    Total Loss: 1441.2993
    MSE Component: 1.4365 (Weighted: 1436.5358)
    NLL Component: 4.6761
    Min Variance: 1.95e-05
    p1=0.242, p2=0.224
--- Iter [1625/2000] ---
    Total Loss: 1228.6099
    MSE Component: 1.2234 (Weighted: 1223.4275)
    NLL Component: 5.0950
    Min Variance: 9.04e-06
    p1=0.242, p2=0.224
--- Iter [1626/2000] ---
    Total Loss: 967.0707
    MSE Component: 0.9632 (Weighted: 963.2201)
    NLL Component: 3.7634
    Min Variance: 7.19e-06
    p1=0.242, p2=0.224
--- Iter [1627/2000] ---
    Total Loss: 1147.2351
    MSE Component: 1.1417 (Weighted: 1141.6662)
    NLL Component: 5.4817
    Min Variance: 1.43e-05
    p1=0.242, p2=0.224
--- Iter [1628/2000] ---
    Total Loss: 985.0924
    MSE Component: 0.9805 (Weighted: 980.4921)
    NLL Component: 4.5131
    Min Variance: 1.97e-05

```

```

    p1=0.242, p2=0.224
--- Iter [1629/2000] ---
    Total Loss: 1249.6687
    MSE Component: 1.2451 (Weighted: 1245.0912)
    NLL Component: 4.4903
    Min Variance: 1.08e-05
    p1=0.242, p2=0.224
--- Iter [1630/2000] ---
    Total Loss: 1205.0385
    MSE Component: 1.2003 (Weighted: 1200.2978)
    NLL Component: 4.6533
    Min Variance: 4.75e-06
    p1=0.242, p2=0.224

--- Validation at iteration 1630 ---
    Average MSE: 293.5550, Average ANEES: 144.9432
-----
--- Iter [1631/2000] ---
    Total Loss: 1117.7350
    MSE Component: 1.1137 (Weighted: 1113.6873)
    NLL Component: 3.9605
    Min Variance: 8.84e-06
    p1=0.242, p2=0.224
--- Iter [1632/2000] ---
    Total Loss: 1020.1216
    MSE Component: 1.0141 (Weighted: 1014.0772)
    NLL Component: 5.9572
    Min Variance: 2.48e-05
    p1=0.242, p2=0.224
--- Iter [1633/2000] ---
    Total Loss: 976.5425
    MSE Component: 0.9728 (Weighted: 972.7666)
    NLL Component: 3.6886
    Min Variance: 8.04e-06
    p1=0.242, p2=0.224
--- Iter [1634/2000] ---
    Total Loss: 1405.6476
    MSE Component: 1.4010 (Weighted: 1401.0265)
    NLL Component: 4.5338
    Min Variance: 3.64e-05
    p1=0.242, p2=0.224
--- Iter [1635/2000] ---
    Total Loss: 1174.2002
    MSE Component: 1.1690 (Weighted: 1169.0285)
    NLL Component: 5.0844
    Min Variance: 9.91e-06
    p1=0.242, p2=0.224
--- Iter [1636/2000] ---

```

```

Total Loss: 1117.2113
MSE Component: 1.1126 (Weighted: 1112.6250)
NLL Component: 4.4990
Min Variance: 2.41e-05
p1=0.242, p2=0.224
--- Iter [1637/2000] ---
Total Loss: 1292.3446
MSE Component: 1.2856 (Weighted: 1285.5947)
NLL Component: 6.6626
Min Variance: 9.72e-06
p1=0.242, p2=0.224
--- Iter [1638/2000] ---
Total Loss: 1382.1038
MSE Component: 1.3777 (Weighted: 1377.6553)
NLL Component: 4.3612
Min Variance: 2.72e-05
p1=0.242, p2=0.224
--- Iter [1639/2000] ---
Total Loss: 1187.7996
MSE Component: 1.1811 (Weighted: 1181.1090)
NLL Component: 6.6033
Min Variance: 1.84e-05
p1=0.242, p2=0.224
--- Iter [1640/2000] ---
Total Loss: 951.3075
MSE Component: 0.9473 (Weighted: 947.2710)
NLL Component: 3.9491
Min Variance: 1.09e-05
p1=0.242, p2=0.224

--- Validation at iteration 1640 ---
Average MSE: 287.3184, Average ANEES: 181.5522
-----
--- Iter [1641/2000] ---
Total Loss: 1352.1276
MSE Component: 1.3495 (Weighted: 1349.5371)
NLL Component: 2.5032
Min Variance: 1.20e-05
p1=0.242, p2=0.224
--- Iter [1642/2000] ---
Total Loss: 1896.3193
MSE Component: 1.8914 (Weighted: 1891.4156)
NLL Component: 4.8164
Min Variance: 1.42e-05
p1=0.242, p2=0.224
--- Iter [1643/2000] ---
Total Loss: 1796.7618
MSE Component: 1.7908 (Weighted: 1790.8322)

```

```

    NLL Component: 5.8424
    Min Variance: 1.99e-05
    p1=0.242, p2=0.224
--- Iter [1644/2000] ---
    Total Loss: 1602.2382
    MSE Component: 1.5964 (Weighted: 1596.3535)
    NLL Component: 5.7974
    Min Variance: 1.60e-05
    p1=0.242, p2=0.224
--- Iter [1645/2000] ---
    Total Loss: 1219.8905
    MSE Component: 1.2152 (Weighted: 1215.1555)
    NLL Component: 4.6478
    Min Variance: 6.67e-06
    p1=0.242, p2=0.224
--- Iter [1646/2000] ---
    Total Loss: 1515.2572
    MSE Component: 1.5103 (Weighted: 1510.2766)
    NLL Component: 4.8933
    Min Variance: 9.40e-06
    p1=0.242, p2=0.224
--- Iter [1647/2000] ---
    Total Loss: 1949.2749
    MSE Component: 1.9441 (Weighted: 1944.1047)
    NLL Component: 5.0830
    Min Variance: 9.74e-06
    p1=0.242, p2=0.224
--- Iter [1648/2000] ---
    Total Loss: 1842.2605
    MSE Component: 1.8370 (Weighted: 1836.9550)
    NLL Component: 5.2182
    Min Variance: 7.98e-06
    p1=0.242, p2=0.224
--- Iter [1649/2000] ---
    Total Loss: 1733.2308
    MSE Component: 1.7287 (Weighted: 1728.7004)
    NLL Component: 4.4431
    Min Variance: 1.44e-05
    p1=0.242, p2=0.224
--- Iter [1650/2000] ---
    Total Loss: 1317.1412
    MSE Component: 1.3125 (Weighted: 1312.5249)
    NLL Component: 4.5291
    Min Variance: 4.56e-06
    p1=0.242, p2=0.224

--- Validation at iteration 1650 ---
    Average MSE: 259.9225, Average ANEES: 162.5930

```

```

-----
--- Iter [1651/2000] ---
    Total Loss: 1737.5626
    MSE Component: 1.7325 (Weighted: 1732.5144)
    NLL Component: 4.9609
    Min Variance: 9.47e-06
    p1=0.242, p2=0.224
--- Iter [1652/2000] ---
    Total Loss: 2312.3760
    MSE Component: 2.3062 (Weighted: 2306.2277)
    NLL Component: 6.0608
    Min Variance: 6.69e-06
    p1=0.242, p2=0.224
--- Iter [1653/2000] ---
    Total Loss: 1687.5991
    MSE Component: 1.6820 (Weighted: 1682.0309)
    NLL Component: 5.4810
    Min Variance: 1.82e-05
    p1=0.242, p2=0.224
--- Iter [1654/2000] ---
    Total Loss: 1757.0491
    MSE Component: 1.7507 (Weighted: 1750.6884)
    NLL Component: 6.2733
    Min Variance: 7.71e-06
    p1=0.242, p2=0.224
--- Iter [1655/2000] ---
    Total Loss: 1896.1605
    MSE Component: 1.8913 (Weighted: 1891.2594)
    NLL Component: 4.8139
    Min Variance: 1.40e-05
    p1=0.242, p2=0.224
--- Iter [1656/2000] ---
    Total Loss: 1505.0519
    MSE Component: 1.5020 (Weighted: 1501.9966)
    NLL Component: 2.9681
    Min Variance: 2.08e-05
    p1=0.242, p2=0.224
--- Iter [1657/2000] ---
    Total Loss: 1426.0217
    MSE Component: 1.4214 (Weighted: 1421.3692)
    NLL Component: 4.5654
    Min Variance: 1.25e-05
    p1=0.242, p2=0.224
--- Iter [1658/2000] ---
    Total Loss: 1628.4602
    MSE Component: 1.6225 (Weighted: 1622.5033)
    NLL Component: 5.8696
    Min Variance: 1.69e-05

```

```

    p1=0.242, p2=0.224
--- Iter [1659/2000] ---
    Total Loss: 1696.9757
    MSE Component: 1.6933 (Weighted: 1693.3020)
    NLL Component: 3.5865
    Min Variance: 2.17e-05
    p1=0.242, p2=0.224
--- Iter [1660/2000] ---
    Total Loss: 1918.0582
    MSE Component: 1.9129 (Weighted: 1912.9471)
    NLL Component: 5.0239
    Min Variance: 2.53e-06
    p1=0.242, p2=0.224

--- Validation at iteration 1660 ---
    Average MSE: 404.2839, Average ANEES: 94.9424
    >>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [1661/2000] ---
    Total Loss: 1491.6804
    MSE Component: 1.4880 (Weighted: 1488.0178)
    NLL Component: 3.5753
    Min Variance: 2.89e-06
    p1=0.242, p2=0.224
--- Iter [1662/2000] ---
    Total Loss: 1233.2820
    MSE Component: 1.2294 (Weighted: 1229.4488)
    NLL Component: 3.7459
    Min Variance: 1.02e-05
    p1=0.242, p2=0.224
--- Iter [1663/2000] ---
    Total Loss: 1219.2926
    MSE Component: 1.2147 (Weighted: 1214.6868)
    NLL Component: 4.5186
    Min Variance: 1.38e-05
    p1=0.242, p2=0.224
--- Iter [1664/2000] ---
    Total Loss: 1206.8691
    MSE Component: 1.2027 (Weighted: 1202.7200)
    NLL Component: 4.0618
    Min Variance: 1.31e-05
    p1=0.242, p2=0.224
--- Iter [1665/2000] ---
    Total Loss: 1286.8661
    MSE Component: 1.2826 (Weighted: 1282.6090)
    NLL Component: 4.1698
    Min Variance: 1.16e-05
    p1=0.242, p2=0.224

```



```

--- Iter [1666/2000] ---
Total Loss: 1268.0198
MSE Component: 1.2624 (Weighted: 1262.3723)
NLL Component: 5.5602
Min Variance: 1.46e-05
p1=0.242, p2=0.224
--- Iter [1667/2000] ---
Total Loss: 1188.9821
MSE Component: 1.1837 (Weighted: 1183.6754)
NLL Component: 5.2193
Min Variance: 1.21e-05
p1=0.242, p2=0.224
--- Iter [1668/2000] ---
Total Loss: 1451.0034
MSE Component: 1.4476 (Weighted: 1447.5852)
NLL Component: 3.3309
Min Variance: 2.74e-05
p1=0.242, p2=0.224
--- Iter [1669/2000] ---
Total Loss: 980.2784
MSE Component: 0.9751 (Weighted: 975.1434)
NLL Component: 5.0477
Min Variance: 1.45e-05
p1=0.242, p2=0.224
--- Iter [1670/2000] ---
Total Loss: 1478.8308
MSE Component: 1.4736 (Weighted: 1473.6409)
NLL Component: 5.1026
Min Variance: 2.54e-05
p1=0.242, p2=0.224

--- Validation at iteration 1670 ---
Average MSE: 319.6726, Average ANEES: 173.3237
-----
--- Iter [1671/2000] ---
Total Loss: 1109.3048
MSE Component: 1.1059 (Weighted: 1105.9227)
NLL Component: 3.2948
Min Variance: 1.78e-05
p1=0.242, p2=0.224
--- Iter [1672/2000] ---
Total Loss: 1400.5599
MSE Component: 1.3963 (Weighted: 1396.3267)
NLL Component: 4.1460
Min Variance: 1.57e-06
p1=0.242, p2=0.224
--- Iter [1673/2000] ---
Total Loss: 1246.9562

```

```

MSE Component: 1.2420 (Weighted: 1241.9631)
NLL Component: 4.9057
Min Variance: 1.15e-05
p1=0.242, p2=0.224
--- Iter [1674/2000] ---
Total Loss: 1446.6233
MSE Component: 1.4427 (Weighted: 1442.6935)
NLL Component: 3.8426
Min Variance: 2.67e-05
p1=0.242, p2=0.224
--- Iter [1675/2000] ---
Total Loss: 1193.9713
MSE Component: 1.1892 (Weighted: 1189.1884)
NLL Component: 4.6957
Min Variance: 1.78e-05
p1=0.242, p2=0.224
--- Iter [1676/2000] ---
Total Loss: 1296.1389
MSE Component: 1.2913 (Weighted: 1291.3303)
NLL Component: 4.7213
Min Variance: 1.48e-05
p1=0.242, p2=0.224
--- Iter [1677/2000] ---
Total Loss: 1269.2844
MSE Component: 1.2644 (Weighted: 1264.4340)
NLL Component: 4.7632
Min Variance: 1.49e-05
p1=0.242, p2=0.224
--- Iter [1678/2000] ---
Total Loss: 986.3071
MSE Component: 0.9834 (Weighted: 983.4147)
NLL Component: 2.8051
Min Variance: 2.36e-05
p1=0.242, p2=0.224
--- Iter [1679/2000] ---
Total Loss: 1474.2356
MSE Component: 1.4693 (Weighted: 1469.2872)
NLL Component: 4.8612
Min Variance: 5.19e-06
p1=0.242, p2=0.224
--- Iter [1680/2000] ---
Total Loss: 1390.1173
MSE Component: 1.3857 (Weighted: 1385.7003)
NLL Component: 4.3297
Min Variance: 4.97e-06
p1=0.242, p2=0.224

--- Validation at iteration 1680 ---

```

Average MSE: 317.7183, Average ANEES: 100.7641

---

```
--- Iter [1681/2000] ---
  Total Loss: 1326.3187
  MSE Component: 1.3198 (Weighted: 1319.7601)
  NLL Component: 6.4714
  Min Variance: 8.55e-06
  p1=0.242, p2=0.224
--- Iter [1682/2000] ---
  Total Loss: 1487.7062
  MSE Component: 1.4831 (Weighted: 1483.1214)
  NLL Component: 4.4976
  Min Variance: 2.17e-05
  p1=0.242, p2=0.224
--- Iter [1683/2000] ---
  Total Loss: 1496.0703
  MSE Component: 1.4916 (Weighted: 1491.5802)
  NLL Component: 4.4028
  Min Variance: 7.67e-06
  p1=0.242, p2=0.224
--- Iter [1684/2000] ---
  Total Loss: 1064.5706
  MSE Component: 1.0601 (Weighted: 1060.1193)
  NLL Component: 4.3641
  Min Variance: 2.86e-06
  p1=0.242, p2=0.224
--- Iter [1685/2000] ---
  Total Loss: 1575.5704
  MSE Component: 1.5719 (Weighted: 1571.9051)
  NLL Component: 3.5780
  Min Variance: 2.96e-05
  p1=0.242, p2=0.224
--- Iter [1686/2000] ---
  Total Loss: 1023.8275
  MSE Component: 1.0192 (Weighted: 1019.1543)
  NLL Component: 4.5859
  Min Variance: 1.08e-05
  p1=0.242, p2=0.224
--- Iter [1687/2000] ---
  Total Loss: 1138.8187
  MSE Component: 1.1345 (Weighted: 1134.4504)
  NLL Component: 4.2810
  Min Variance: 1.45e-05
  p1=0.242, p2=0.224
--- Iter [1688/2000] ---
  Total Loss: 1431.9487
  MSE Component: 1.4263 (Weighted: 1426.3240)
  NLL Component: 5.5375
```

```

    Min Variance: 8.80e-06
    p1=0.242, p2=0.224
--- Iter [1689/2000] ---
    Total Loss: 1089.5819
    MSE Component: 1.0864 (Weighted: 1086.3870)
    NLL Component: 3.1076
    Min Variance: 2.32e-05
    p1=0.241, p2=0.224
--- Iter [1690/2000] ---
    Total Loss: 1489.4224
    MSE Component: 1.4860 (Weighted: 1486.0387)
    NLL Component: 3.2963
    Min Variance: 1.00e-06
    p1=0.241, p2=0.224

--- Validation at iteration 1690 ---
    Average MSE: 302.1770, Average ANEES: 148.9598
-----
--- Iter [1691/2000] ---
    Total Loss: 1951.6315
    MSE Component: 1.9468 (Weighted: 1946.7831)
    NLL Component: 4.7611
    Min Variance: 1.65e-05
    p1=0.241, p2=0.224
--- Iter [1692/2000] ---
    Total Loss: 1035.2267
    MSE Component: 1.0289 (Weighted: 1028.9267)
    NLL Component: 6.2127
    Min Variance: 3.63e-06
    p1=0.241, p2=0.224
--- Iter [1693/2000] ---
    Total Loss: 1159.9225
    MSE Component: 1.1558 (Weighted: 1155.8415)
    NLL Component: 3.9938
    Min Variance: 1.69e-05
    p1=0.241, p2=0.224
--- Iter [1694/2000] ---
    Total Loss: 1077.2482
    MSE Component: 1.0740 (Weighted: 1073.9783)
    NLL Component: 3.1826
    Min Variance: 5.02e-06
    p1=0.241, p2=0.224
--- Iter [1695/2000] ---
    Total Loss: 1407.8733
    MSE Component: 1.4035 (Weighted: 1403.4877)
    NLL Component: 4.2984
    Min Variance: 1.22e-05
    p1=0.241, p2=0.224

```

```

--- Iter [1696/2000] ---
Total Loss: 1288.7495
MSE Component: 1.2841 (Weighted: 1284.1032)
NLL Component: 4.5591
Min Variance: 1.27e-05
p1=0.241, p2=0.223
--- Iter [1697/2000] ---
Total Loss: 1283.0646
MSE Component: 1.2785 (Weighted: 1278.5087)
NLL Component: 4.4686
Min Variance: 2.80e-05
p1=0.241, p2=0.223
--- Iter [1698/2000] ---
Total Loss: 1260.1425
MSE Component: 1.2532 (Weighted: 1253.1798)
NLL Component: 6.8754
Min Variance: 1.75e-05
p1=0.241, p2=0.223
--- Iter [1699/2000] ---
Total Loss: 1033.2516
MSE Component: 1.0288 (Weighted: 1028.8239)
NLL Component: 4.3404
Min Variance: 1.60e-05
p1=0.241, p2=0.223
--- Iter [1700/2000] ---
Total Loss: 1108.3901
MSE Component: 1.1046 (Weighted: 1104.6144)
NLL Component: 3.6884
Min Variance: 1.69e-05
p1=0.241, p2=0.223

--- Validation at iteration 1700 ---
Average MSE: 328.9963, Average ANEES: 129.7758
-----
--- Iter [1701/2000] ---
Total Loss: 1105.1205
MSE Component: 1.1015 (Weighted: 1101.4574)
NLL Component: 3.5758
Min Variance: 3.21e-06
p1=0.241, p2=0.223
--- Iter [1702/2000] ---
Total Loss: 1259.6934
MSE Component: 1.2542 (Weighted: 1254.1722)
NLL Component: 5.4338
Min Variance: 1.94e-05
p1=0.241, p2=0.223
--- Iter [1703/2000] ---
Total Loss: 1585.3800

```

```

MSE Component: 1.5810 (Weighted: 1581.0150)
NLL Component: 4.2777
Min Variance: 1.21e-05
p1=0.241, p2=0.223
--- Iter [1704/2000] ---
Total Loss: 1411.6559
MSE Component: 1.4075 (Weighted: 1407.4978)
NLL Component: 4.0708
Min Variance: 6.88e-06
p1=0.241, p2=0.223
--- Iter [1705/2000] ---
Total Loss: 1003.7008
MSE Component: 0.9984 (Weighted: 998.4490)
NLL Component: 5.1645
Min Variance: 1.17e-05
p1=0.241, p2=0.223
--- Iter [1706/2000] ---
Total Loss: 1012.7353
MSE Component: 1.0082 (Weighted: 1008.2279)
NLL Component: 4.4200
Min Variance: 1.08e-05
p1=0.241, p2=0.223
--- Iter [1707/2000] ---
Total Loss: 1278.9480
MSE Component: 1.2756 (Weighted: 1275.5877)
NLL Component: 3.2730
Min Variance: 1.85e-05
p1=0.241, p2=0.223
--- Iter [1708/2000] ---
Total Loss: 1728.4301
MSE Component: 1.7242 (Weighted: 1724.2330)
NLL Component: 4.1097
Min Variance: 1.33e-05
p1=0.241, p2=0.223
--- Iter [1709/2000] ---
Total Loss: 1701.7673
MSE Component: 1.6986 (Weighted: 1698.5662)
NLL Component: 3.1139
Min Variance: 1.01e-05
p1=0.241, p2=0.223
--- Iter [1710/2000] ---
Total Loss: 1503.0044
MSE Component: 1.4982 (Weighted: 1498.1779)
NLL Component: 4.7393
Min Variance: 2.89e-05
p1=0.241, p2=0.223

--- Validation at iteration 1710 ---

```

Average MSE: 343.8442, Average ANEES: 155.8881

---

```
--- Iter [1711/2000] ---
  Total Loss: 1781.7766
  MSE Component: 1.7773 (Weighted: 1777.3229)
  NLL Component: 4.3665
  Min Variance: 9.77e-06
  p1=0.241, p2=0.223
--- Iter [1712/2000] ---
  Total Loss: 949.2564
  MSE Component: 0.9450 (Weighted: 944.9822)
  NLL Component: 4.1869
  Min Variance: 2.06e-05
  p1=0.241, p2=0.223
--- Iter [1713/2000] ---
  Total Loss: 1029.8019
  MSE Component: 1.0265 (Weighted: 1026.5296)
  NLL Component: 3.1851
  Min Variance: 1.94e-05
  p1=0.241, p2=0.223
--- Iter [1714/2000] ---
  Total Loss: 1537.3646
  MSE Component: 1.5318 (Weighted: 1531.8292)
  NLL Component: 5.4481
  Min Variance: 6.22e-06
  p1=0.241, p2=0.223
--- Iter [1715/2000] ---
  Total Loss: 1680.2317
  MSE Component: 1.6765 (Weighted: 1676.4609)
  NLL Component: 3.6835
  Min Variance: 2.52e-05
  p1=0.241, p2=0.223
--- Iter [1716/2000] ---
  Total Loss: 1566.4128
  MSE Component: 1.5627 (Weighted: 1562.7497)
  NLL Component: 3.5758
  Min Variance: 9.05e-06
  p1=0.241, p2=0.223
--- Iter [1717/2000] ---
  Total Loss: 1755.8080
  MSE Component: 1.7510 (Weighted: 1751.0304)
  NLL Component: 4.6903
  Min Variance: 2.93e-05
  p1=0.241, p2=0.223
--- Iter [1718/2000] ---
  Total Loss: 1647.7261
  MSE Component: 1.6444 (Weighted: 1644.4198)
  NLL Component: 3.2190
```

```

    Min Variance: 2.11e-05
    p1=0.241, p2=0.223
--- Iter [1719/2000] ---
    Total Loss: 1306.9004
    MSE Component: 1.3022 (Weighted: 1302.1711)
    NLL Component: 4.6419
    Min Variance: 1.24e-06
    p1=0.241, p2=0.223
--- Iter [1720/2000] ---
    Total Loss: 991.2697
    MSE Component: 0.9884 (Weighted: 988.3570)
    NLL Component: 2.8254
    Min Variance: 5.97e-06
    p1=0.241, p2=0.223

--- Validation at iteration 1720 ---
    Average MSE: 336.4821, Average ANEES: 121.5796
-----
--- Iter [1721/2000] ---
    Total Loss: 1525.4771
    MSE Component: 1.5205 (Weighted: 1520.5430)
    NLL Component: 4.8469
    Min Variance: 6.47e-06
    p1=0.241, p2=0.223
--- Iter [1722/2000] ---
    Total Loss: 1644.2662
    MSE Component: 1.6412 (Weighted: 1641.2060)
    NLL Component: 2.9729
    Min Variance: 7.28e-06
    p1=0.241, p2=0.223
--- Iter [1723/2000] ---
    Total Loss: 2365.7102
    MSE Component: 2.3617 (Weighted: 2361.6681)
    NLL Component: 3.9547
    Min Variance: 1.70e-05
    p1=0.241, p2=0.223
--- Iter [1724/2000] ---
    Total Loss: 1932.6829
    MSE Component: 1.9276 (Weighted: 1927.6354)
    NLL Component: 4.9602
    Min Variance: 1.69e-05
    p1=0.241, p2=0.223
--- Iter [1725/2000] ---
    Total Loss: 2694.5867
    MSE Component: 2.6901 (Weighted: 2690.1300)
    NLL Component: 4.3696
    Min Variance: 2.80e-05
    p1=0.241, p2=0.223

```



```

--- Iter [1726/2000] ---
Total Loss: 2071.3367
MSE Component: 2.0678 (Weighted: 2067.7824)
NLL Component: 3.4670
Min Variance: 9.11e-06
p1=0.241, p2=0.223
--- Iter [1727/2000] ---
Total Loss: 2478.6812
MSE Component: 2.4739 (Weighted: 2473.8600)
NLL Component: 4.7340
Min Variance: 1.19e-05
p1=0.241, p2=0.223
--- Iter [1728/2000] ---
Total Loss: 2293.4160
MSE Component: 2.2874 (Weighted: 2287.3883)
NLL Component: 5.9405
Min Variance: 1.47e-05
p1=0.241, p2=0.223
--- Iter [1729/2000] ---
Total Loss: 1635.4020
MSE Component: 1.6314 (Weighted: 1631.4124)
NLL Component: 3.9024
Min Variance: 2.56e-05
p1=0.241, p2=0.223
--- Iter [1730/2000] ---
Total Loss: 1251.4916
MSE Component: 1.2466 (Weighted: 1246.6254)
NLL Component: 4.7790
Min Variance: 1.18e-05
p1=0.241, p2=0.223

--- Validation at iteration 1730 ---
Average MSE: 311.6417, Average ANEES: 180.7485
-----
--- Iter [1731/2000] ---
Total Loss: 1344.5955
MSE Component: 1.3398 (Weighted: 1339.7543)
NLL Component: 4.7538
Min Variance: 1.57e-05
p1=0.241, p2=0.223
--- Iter [1732/2000] ---
Total Loss: 1633.3971
MSE Component: 1.6294 (Weighted: 1629.3505)
NLL Component: 3.9592
Min Variance: 6.23e-06
p1=0.241, p2=0.223
--- Iter [1733/2000] ---
Total Loss: 3082.7026

```

```

MSE Component: 3.0794 (Weighted: 3079.4494)
NLL Component: 3.1659
Min Variance: 1.83e-05
p1=0.241, p2=0.223
--- Iter [1734/2000] ---
Total Loss: 2588.2615
MSE Component: 2.5831 (Weighted: 2583.1387)
NLL Component: 5.0356
Min Variance: 2.11e-05
p1=0.241, p2=0.223
--- Iter [1735/2000] ---
Total Loss: 2914.0601
MSE Component: 2.9102 (Weighted: 2910.2166)
NLL Component: 3.7562
Min Variance: 1.60e-05
p1=0.241, p2=0.223
--- Iter [1736/2000] ---
Total Loss: 2500.8726
MSE Component: 2.4966 (Weighted: 2496.6478)
NLL Component: 4.1374
Min Variance: 1.07e-05
p1=0.241, p2=0.223
--- Iter [1737/2000] ---
Total Loss: 2441.6609
MSE Component: 2.4367 (Weighted: 2436.6689)
NLL Component: 4.9047
Min Variance: 2.25e-05
p1=0.241, p2=0.223
--- Iter [1738/2000] ---
Total Loss: 2025.6207
MSE Component: 2.0213 (Weighted: 2021.3351)
NLL Component: 4.1984
Min Variance: 3.77e-06
p1=0.241, p2=0.223
--- Iter [1739/2000] ---
Total Loss: 1884.2706
MSE Component: 1.8798 (Weighted: 1879.8250)
NLL Component: 4.3584
Min Variance: 1.40e-05
p1=0.241, p2=0.223
--- Iter [1740/2000] ---
Total Loss: 1494.5109
MSE Component: 1.4918 (Weighted: 1491.8472)
NLL Component: 2.5764
Min Variance: 9.50e-06
p1=0.241, p2=0.223
--- Validation at iteration 1740 ---

```

Average MSE: 329.7664, Average ANEES: 132.3983

---

```
--- Iter [1741/2000] ---
  Total Loss: 1101.7095
  MSE Component: 1.0976 (Weighted: 1097.6349)
  NLL Component: 3.9873
  Min Variance: 7.11e-06
  p1=0.241, p2=0.223
--- Iter [1742/2000] ---
  Total Loss: 982.8875
  MSE Component: 0.9797 (Weighted: 979.6729)
  NLL Component: 3.1274
  Min Variance: 3.18e-05
  p1=0.241, p2=0.223
--- Iter [1743/2000] ---
  Total Loss: 1477.1243
  MSE Component: 1.4727 (Weighted: 1472.7480)
  NLL Component: 4.2890
  Min Variance: 1.56e-05
  p1=0.241, p2=0.223
--- Iter [1744/2000] ---
  Total Loss: 1896.2474
  MSE Component: 1.8902 (Weighted: 1890.1557)
  NLL Component: 6.0045
  Min Variance: 1.55e-05
  p1=0.241, p2=0.223
--- Iter [1745/2000] ---
  Total Loss: 1651.1417
  MSE Component: 1.6463 (Weighted: 1646.3437)
  NLL Component: 4.7107
  Min Variance: 1.22e-05
  p1=0.241, p2=0.223
--- Iter [1746/2000] ---
  Total Loss: 1945.7689
  MSE Component: 1.9420 (Weighted: 1941.9857)
  NLL Component: 3.6959
  Min Variance: 1.52e-05
  p1=0.241, p2=0.223
--- Iter [1747/2000] ---
  Total Loss: 1697.5964
  MSE Component: 1.6935 (Weighted: 1693.5160)
  NLL Component: 3.9931
  Min Variance: 5.98e-06
  p1=0.241, p2=0.223
--- Iter [1748/2000] ---
  Total Loss: 1567.4128
  MSE Component: 1.5639 (Weighted: 1563.8758)
  NLL Component: 3.4498
```

```

    Min Variance: 3.35e-06
    p1=0.241, p2=0.223
--- Iter [1749/2000] ---
    Total Loss: 1816.4132
    MSE Component: 1.8124 (Weighted: 1812.3555)
    NLL Component: 3.9705
    Min Variance: 1.45e-05
    p1=0.241, p2=0.223
--- Iter [1750/2000] ---
    Total Loss: 1182.8328
    MSE Component: 1.1775 (Weighted: 1177.5138)
    NLL Component: 5.2317
    Min Variance: 1.82e-05
    p1=0.241, p2=0.223

--- Validation at iteration 1750 ---
    Average MSE: 355.3965, Average ANEES: 154.4475
-----
--- Iter [1751/2000] ---
    Total Loss: 1360.4558
    MSE Component: 1.3556 (Weighted: 1355.5747)
    NLL Component: 4.7938
    Min Variance: 1.45e-05
    p1=0.241, p2=0.223
--- Iter [1752/2000] ---
    Total Loss: 1480.3639
    MSE Component: 1.4764 (Weighted: 1476.4037)
    NLL Component: 3.8729
    Min Variance: 5.22e-06
    p1=0.241, p2=0.223
--- Iter [1753/2000] ---
    Total Loss: 1826.2793
    MSE Component: 1.8227 (Weighted: 1822.7236)
    NLL Component: 3.4684
    Min Variance: 1.52e-05
    p1=0.241, p2=0.223
--- Iter [1754/2000] ---
    Total Loss: 2078.2312
    MSE Component: 2.0740 (Weighted: 2073.9861)
    NLL Component: 4.1579
    Min Variance: 2.39e-05
    p1=0.241, p2=0.223
--- Iter [1755/2000] ---
    Total Loss: 1489.7998
    MSE Component: 1.4857 (Weighted: 1485.6718)
    NLL Component: 4.0408
    Min Variance: 1.41e-05
    p1=0.241, p2=0.223

```

```

--- Iter [1756/2000] ---
Total Loss: 2196.4836
MSE Component: 2.1923 (Weighted: 2192.3022)
NLL Component: 4.0943
Min Variance: 8.17e-06
p1=0.241, p2=0.223
--- Iter [1757/2000] ---
Total Loss: 1522.0677
MSE Component: 1.5183 (Weighted: 1518.3308)
NLL Component: 3.6497
Min Variance: 1.32e-05
p1=0.241, p2=0.223
--- Iter [1758/2000] ---
Total Loss: 1674.1564
MSE Component: 1.6688 (Weighted: 1668.8095)
NLL Component: 5.2595
Min Variance: 1.25e-05
p1=0.241, p2=0.223
--- Iter [1759/2000] ---
Total Loss: 1334.8611
MSE Component: 1.3305 (Weighted: 1330.4794)
NLL Component: 4.2945
Min Variance: 6.68e-06
p1=0.241, p2=0.223
--- Iter [1760/2000] ---
Total Loss: 1325.6893
MSE Component: 1.3223 (Weighted: 1322.2510)
NLL Component: 3.3510
Min Variance: 2.16e-05
p1=0.240, p2=0.223

--- Validation at iteration 1760 ---
Average MSE: 306.8404, Average ANEES: 142.9633
-----
--- Iter [1761/2000] ---
Total Loss: 1298.0321
MSE Component: 1.2932 (Weighted: 1293.1992)
NLL Component: 4.7457
Min Variance: 1.67e-05
p1=0.240, p2=0.223
--- Iter [1762/2000] ---
Total Loss: 1261.6882
MSE Component: 1.2569 (Weighted: 1256.9295)
NLL Component: 4.6715
Min Variance: 5.03e-06
p1=0.240, p2=0.223
--- Iter [1763/2000] ---
Total Loss: 2540.8125

```

```

MSE Component: 2.5367 (Weighted: 2536.7060)
NLL Component: 4.0192
Min Variance: 2.70e-05
p1=0.240, p2=0.223
--- Iter [1764/2000] ---
Total Loss: 2342.3870
MSE Component: 2.3383 (Weighted: 2338.2788)
NLL Component: 4.0209
Min Variance: 8.16e-06
p1=0.240, p2=0.223
--- Iter [1765/2000] ---
Total Loss: 2461.3779
MSE Component: 2.4575 (Weighted: 2457.4904)
NLL Component: 3.8003
Min Variance: 1.09e-05
p1=0.240, p2=0.223
--- Iter [1766/2000] ---
Total Loss: 2498.1555
MSE Component: 2.4934 (Weighted: 2493.4237)
NLL Component: 4.6448
Min Variance: 7.58e-06
p1=0.240, p2=0.223
--- Iter [1767/2000] ---
Total Loss: 1983.8986
MSE Component: 1.9787 (Weighted: 1978.6646)
NLL Component: 5.1467
Min Variance: 1.09e-05
p1=0.240, p2=0.223
--- Iter [1768/2000] ---
Total Loss: 1632.6371
MSE Component: 1.6267 (Weighted: 1626.7292)
NLL Component: 5.8207
Min Variance: 1.34e-05
p1=0.240, p2=0.223
--- Iter [1769/2000] ---
Total Loss: 1571.7297
MSE Component: 1.5686 (Weighted: 1568.5939)
NLL Component: 3.0487
Min Variance: 2.63e-05
p1=0.240, p2=0.223
--- Iter [1770/2000] ---
Total Loss: 1425.4304
MSE Component: 1.4211 (Weighted: 1421.0560)
NLL Component: 4.2873
Min Variance: 1.89e-05
p1=0.240, p2=0.223
--- Validation at iteration 1770 ---

```

Average MSE: 386.2290, Average ANEES: 146.4767

---

```
--- Iter [1771/2000] ---
  Total Loss: 1298.2513
  MSE Component: 1.2932 (Weighted: 1293.2273)
  NLL Component: 4.9369
  Min Variance: 7.66e-06
  p1=0.240, p2=0.223
--- Iter [1772/2000] ---
  Total Loss: 1224.2773
  MSE Component: 1.2205 (Weighted: 1220.5009)
  NLL Component: 3.6892
  Min Variance: 6.00e-06
  p1=0.240, p2=0.223
--- Iter [1773/2000] ---
  Total Loss: 1256.9192
  MSE Component: 1.2532 (Weighted: 1253.2146)
  NLL Component: 3.6174
  Min Variance: 1.71e-05
  p1=0.240, p2=0.223
--- Iter [1774/2000] ---
  Total Loss: 1476.1819
  MSE Component: 1.4724 (Weighted: 1472.4334)
  NLL Component: 3.6613
  Min Variance: 2.40e-05
  p1=0.240, p2=0.223
--- Iter [1775/2000] ---
  Total Loss: 1511.9918
  MSE Component: 1.5084 (Weighted: 1508.3776)
  NLL Component: 3.5272
  Min Variance: 1.14e-05
  p1=0.240, p2=0.223
--- Iter [1776/2000] ---
  Total Loss: 1479.0277
  MSE Component: 1.4751 (Weighted: 1475.1457)
  NLL Component: 3.7948
  Min Variance: 1.39e-05
  p1=0.240, p2=0.223
--- Iter [1777/2000] ---
  Total Loss: 1432.5383
  MSE Component: 1.4289 (Weighted: 1428.9277)
  NLL Component: 3.5236
  Min Variance: 1.93e-05
  p1=0.240, p2=0.223
--- Iter [1778/2000] ---
  Total Loss: 1353.9811
  MSE Component: 1.3492 (Weighted: 1349.1691)
  NLL Component: 4.7247
```

```

    Min Variance: 1.85e-05
    p1=0.240, p2=0.223
--- Iter [1779/2000] ---
    Total Loss: 1364.7885
    MSE Component: 1.3615 (Weighted: 1361.4646)
    NLL Component: 3.2367
    Min Variance: 1.19e-05
    p1=0.240, p2=0.223
--- Iter [1780/2000] ---
    Total Loss: 1225.8561
    MSE Component: 1.2220 (Weighted: 1222.0398)
    NLL Component: 3.7292
    Min Variance: 1.71e-05
    p1=0.240, p2=0.223

--- Validation at iteration 1780 ---
    Average MSE: 369.3162, Average ANEES: 115.5890
-----
--- Iter [1781/2000] ---
    Total Loss: 1137.8951
    MSE Component: 1.1326 (Weighted: 1132.5589)
    NLL Component: 5.2490
    Min Variance: 2.27e-05
    p1=0.240, p2=0.223
--- Iter [1782/2000] ---
    Total Loss: 1067.5753
    MSE Component: 1.0624 (Weighted: 1062.4384)
    NLL Component: 5.0497
    Min Variance: 2.04e-05
    p1=0.240, p2=0.223
--- Iter [1783/2000] ---
    Total Loss: 1497.1539
    MSE Component: 1.4932 (Weighted: 1493.2474)
    NLL Component: 3.8194
    Min Variance: 6.39e-06
    p1=0.240, p2=0.223
--- Iter [1784/2000] ---
    Total Loss: 978.2404
    MSE Component: 0.9732 (Weighted: 973.1979)
    NLL Component: 4.9552
    Min Variance: 9.70e-06
    p1=0.240, p2=0.223
--- Iter [1785/2000] ---
    Total Loss: 998.9162
    MSE Component: 0.9944 (Weighted: 994.4406)
    NLL Component: 4.3884
    Min Variance: 8.06e-06
    p1=0.240, p2=0.223

```



```

--- Iter [1786/2000] ---
Total Loss: 1143.5433
MSE Component: 1.1395 (Weighted: 1139.4815)
NLL Component: 3.9746
Min Variance: 1.72e-05
p1=0.240, p2=0.223
--- Iter [1787/2000] ---
Total Loss: 1104.1555
MSE Component: 1.1012 (Weighted: 1101.1565)
NLL Component: 2.9118
Min Variance: 8.84e-06
p1=0.240, p2=0.223
--- Iter [1788/2000] ---
Total Loss: 1355.7412
MSE Component: 1.3513 (Weighted: 1351.2508)
NLL Component: 4.4033
Min Variance: 1.87e-05
p1=0.240, p2=0.223
--- Iter [1789/2000] ---
Total Loss: 1326.2141
MSE Component: 1.3230 (Weighted: 1323.0164)
NLL Component: 3.1106
Min Variance: 1.76e-05
p1=0.240, p2=0.223
--- Iter [1790/2000] ---
Total Loss: 1495.9546
MSE Component: 1.4911 (Weighted: 1491.1181)
NLL Component: 4.7494
Min Variance: 5.25e-06
p1=0.240, p2=0.223

--- Validation at iteration 1790 ---
Average MSE: 365.5129, Average ANEES: 65.5947
>>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [1791/2000] ---
Total Loss: 1231.0321
MSE Component: 1.2273 (Weighted: 1227.3139)
NLL Component: 3.6311
Min Variance: 5.52e-06
p1=0.240, p2=0.223
--- Iter [1792/2000] ---
Total Loss: 1348.6781
MSE Component: 1.3445 (Weighted: 1344.4818)
NLL Component: 4.1091
Min Variance: 2.50e-05
p1=0.240, p2=0.223
--- Iter [1793/2000] ---

```

```

Total Loss: 1909.8402
MSE Component: 1.9066 (Weighted: 1906.6470)
NLL Component: 3.1061
Min Variance: 2.12e-05
p1=0.240, p2=0.223
--- Iter [1794/2000] ---
Total Loss: 1211.2638
MSE Component: 1.2070 (Weighted: 1206.9610)
NLL Component: 4.2155
Min Variance: 3.97e-06
p1=0.240, p2=0.223
--- Iter [1795/2000] ---
Total Loss: 2138.9744
MSE Component: 2.1344 (Weighted: 2134.3939)
NLL Component: 4.4932
Min Variance: 2.13e-05
p1=0.240, p2=0.223
--- Iter [1796/2000] ---
Total Loss: 1454.4899
MSE Component: 1.4499 (Weighted: 1449.9104)
NLL Component: 4.4924
Min Variance: 6.70e-06
p1=0.240, p2=0.223
--- Iter [1797/2000] ---
Total Loss: 972.8840
MSE Component: 0.9685 (Weighted: 968.5224)
NLL Component: 4.2745
Min Variance: 1.08e-05
p1=0.240, p2=0.223
--- Iter [1798/2000] ---
Total Loss: 1049.6740
MSE Component: 1.0455 (Weighted: 1045.4856)
NLL Component: 4.1013
Min Variance: 5.93e-06
p1=0.240, p2=0.223
--- Iter [1799/2000] ---
Total Loss: 1239.2130
MSE Component: 1.2347 (Weighted: 1234.6667)
NLL Component: 4.4591
Min Variance: 1.34e-05
p1=0.240, p2=0.223
--- Iter [1800/2000] ---
Total Loss: 1643.6807
MSE Component: 1.6387 (Weighted: 1638.7124)
NLL Component: 4.8811
Min Variance: 1.00e-05
p1=0.240, p2=0.223

```

```

--- Validation at iteration 1800 ---
Average MSE: 355.0560, Average ANEES: 103.3066
-----
--- Iter [1801/2000] ---
Total Loss: 1368.6104
MSE Component: 1.3629 (Weighted: 1362.8694)
NLL Component: 5.6538
Min Variance: 1.96e-05
p1=0.240, p2=0.223
--- Iter [1802/2000] ---
Total Loss: 1226.1400
MSE Component: 1.2217 (Weighted: 1221.6957)
NLL Component: 4.3572
Min Variance: 5.51e-06
p1=0.240, p2=0.223
--- Iter [1803/2000] ---
Total Loss: 931.3597
MSE Component: 0.9272 (Weighted: 927.1780)
NLL Component: 4.0946
Min Variance: 8.91e-06
p1=0.240, p2=0.223
--- Iter [1804/2000] ---
Total Loss: 1090.1350
MSE Component: 1.0853 (Weighted: 1085.2897)
NLL Component: 4.7582
Min Variance: 4.83e-06
p1=0.240, p2=0.223
--- Iter [1805/2000] ---
Total Loss: 1333.0232
MSE Component: 1.3299 (Weighted: 1329.8960)
NLL Component: 3.0401
Min Variance: 1.83e-05
p1=0.240, p2=0.223
--- Iter [1806/2000] ---
Total Loss: 1075.6284
MSE Component: 1.0725 (Weighted: 1072.4536)
NLL Component: 3.0876
Min Variance: 1.15e-05
p1=0.240, p2=0.223
--- Iter [1807/2000] ---
Total Loss: 993.4370
MSE Component: 0.9888 (Weighted: 988.8101)
NLL Component: 4.5397
Min Variance: 8.02e-06
p1=0.240, p2=0.223
--- Iter [1808/2000] ---
Total Loss: 1307.6597
MSE Component: 1.3025 (Weighted: 1302.5442)

```

```

    NLL Component: 5.0283
    Min Variance: 8.47e-06
    p1=0.240, p2=0.223
--- Iter [1809/2000] ---
    Total Loss: 837.3105
    MSE Component: 0.8341 (Weighted: 834.1424)
    NLL Component: 3.0809
    Min Variance: 7.19e-06
    p1=0.240, p2=0.223
--- Iter [1810/2000] ---
    Total Loss: 1028.9149
    MSE Component: 1.0261 (Weighted: 1026.0941)
    NLL Component: 2.7336
    Min Variance: 8.56e-06
    p1=0.240, p2=0.223

--- Validation at iteration 1810 ---
    Average MSE: 444.1779, Average ANEES: 65.5429
    >>> New best VALIDATION ANEES! Saving model. <<<
-----
--- Iter [1811/2000] ---
    Total Loss: 1322.6475
    MSE Component: 1.3185 (Weighted: 1318.5315)
    NLL Component: 4.0288
    Min Variance: 1.64e-05
    p1=0.240, p2=0.223
--- Iter [1812/2000] ---
    Total Loss: 1531.1265
    MSE Component: 1.5276 (Weighted: 1527.6489)
    NLL Component: 3.3904
    Min Variance: 8.44e-06
    p1=0.240, p2=0.223
--- Iter [1813/2000] ---
    Total Loss: 1334.1595
    MSE Component: 1.3294 (Weighted: 1329.4450)
    NLL Component: 4.6274
    Min Variance: 7.25e-06
    p1=0.240, p2=0.222
--- Iter [1814/2000] ---
    Total Loss: 1658.8005
    MSE Component: 1.6547 (Weighted: 1654.7167)
    NLL Component: 3.9967
    Min Variance: 1.30e-05
    p1=0.240, p2=0.222
--- Iter [1815/2000] ---
    Total Loss: 1225.9120
    MSE Component: 1.2225 (Weighted: 1222.5255)
    NLL Component: 3.2994

```

```

    Min Variance: 2.01e-05
    p1=0.240, p2=0.222
--- Iter [1816/2000] ---
    Total Loss: 2804.4417
    MSE Component: 2.7999 (Weighted: 2799.9492)
    NLL Component: 4.4053
    Min Variance: 5.05e-06
    p1=0.240, p2=0.222
--- Iter [1817/2000] ---
    Total Loss: 1544.0232
    MSE Component: 1.5409 (Weighted: 1540.8658)
    NLL Component: 3.0703
    Min Variance: 1.05e-05
    p1=0.240, p2=0.222
--- Iter [1818/2000] ---
    Total Loss: 1189.0817
    MSE Component: 1.1854 (Weighted: 1185.4188)
    NLL Component: 3.5757
    Min Variance: 5.07e-06
    p1=0.240, p2=0.222
--- Iter [1819/2000] ---
    Total Loss: 1334.5604
    MSE Component: 1.3303 (Weighted: 1330.2780)
    NLL Component: 4.1952
    Min Variance: 1.31e-05
    p1=0.240, p2=0.222
--- Iter [1820/2000] ---
    Total Loss: 1254.3732
    MSE Component: 1.2503 (Weighted: 1250.3182)
    NLL Component: 3.9679
    Min Variance: 1.32e-05
    p1=0.240, p2=0.222

--- Validation at iteration 1820 ---
    Average MSE: 411.4088, Average ANEES: 91.2940
-----
--- Iter [1821/2000] ---
    Total Loss: 1259.0094
    MSE Component: 1.2552 (Weighted: 1255.2006)
    NLL Component: 3.7216
    Min Variance: 2.81e-05
    p1=0.240, p2=0.222
--- Iter [1822/2000] ---
    Total Loss: 1573.3192
    MSE Component: 1.5680 (Weighted: 1568.0324)
    NLL Component: 5.1997
    Min Variance: 1.65e-05
    p1=0.240, p2=0.222

```

```

--- Iter [1823/2000] ---
Total Loss: 1161.1398
MSE Component: 1.1572 (Weighted: 1157.2207)
NLL Component: 3.8319
Min Variance: 1.15e-05
p1=0.240, p2=0.222
--- Iter [1824/2000] ---
Total Loss: 806.3856
MSE Component: 0.8034 (Weighted: 803.4438)
NLL Component: 2.8546
Min Variance: 1.16e-05
p1=0.239, p2=0.222
--- Iter [1825/2000] ---
Total Loss: 1066.3496
MSE Component: 1.0621 (Weighted: 1062.0923)
NLL Component: 4.1702
Min Variance: 2.19e-05
p1=0.239, p2=0.222
--- Iter [1826/2000] ---
Total Loss: 1379.7284
MSE Component: 1.3751 (Weighted: 1375.1186)
NLL Component: 4.5226
Min Variance: 1.09e-05
p1=0.239, p2=0.222
--- Iter [1827/2000] ---
Total Loss: 1590.3716
MSE Component: 1.5864 (Weighted: 1586.3698)
NLL Component: 3.9146
Min Variance: 6.07e-06
p1=0.239, p2=0.222
--- Iter [1828/2000] ---
Total Loss: 1226.9186
MSE Component: 1.2235 (Weighted: 1223.4873)
NLL Component: 3.3441
Min Variance: 1.30e-05
p1=0.239, p2=0.222
--- Iter [1829/2000] ---
Total Loss: 1197.2097
MSE Component: 1.1932 (Weighted: 1193.1971)
NLL Component: 3.9254
Min Variance: 1.44e-05
p1=0.239, p2=0.222
--- Iter [1830/2000] ---
Total Loss: 1271.7911
MSE Component: 1.2677 (Weighted: 1267.6567)
NLL Component: 4.0473
Min Variance: 1.36e-05
p1=0.239, p2=0.222

```

```

--- Validation at iteration 1830 ---
Average MSE: 337.5705, Average ANEES: 76.8617
-----
--- Iter [1831/2000] ---
Total Loss: 1350.5763
MSE Component: 1.3464 (Weighted: 1346.3690)
NLL Component: 4.1201
Min Variance: 1.73e-05
p1=0.239, p2=0.222
--- Iter [1832/2000] ---
Total Loss: 1134.4290
MSE Component: 1.1297 (Weighted: 1129.7011)
NLL Component: 4.6406
Min Variance: 9.59e-06
p1=0.239, p2=0.222
--- Iter [1833/2000] ---
Total Loss: 860.0209
MSE Component: 0.8567 (Weighted: 856.6619)
NLL Component: 3.2719
Min Variance: 9.47e-06
p1=0.239, p2=0.222
--- Iter [1834/2000] ---
Total Loss: 1053.8787
MSE Component: 1.0504 (Weighted: 1050.4127)
NLL Component: 3.3789
Min Variance: 8.41e-06
p1=0.239, p2=0.222
--- Iter [1835/2000] ---
Total Loss: 963.6146
MSE Component: 0.9603 (Weighted: 960.3155)
NLL Component: 3.2120
Min Variance: 1.57e-05
p1=0.239, p2=0.222
--- Iter [1836/2000] ---
Total Loss: 1239.1301
MSE Component: 1.2346 (Weighted: 1234.5824)
NLL Component: 4.4606
Min Variance: 1.03e-05
p1=0.239, p2=0.222
--- Iter [1837/2000] ---
Total Loss: 1211.6101
MSE Component: 1.2073 (Weighted: 1207.3486)
NLL Component: 4.1743
Min Variance: 1.41e-05
p1=0.239, p2=0.222
--- Iter [1838/2000] ---
Total Loss: 1090.4915

```

```

MSE Component: 1.0871 (Weighted: 1087.1078)
NLL Component: 3.2965
Min Variance: 7.61e-06
p1=0.239, p2=0.222
--- Iter [1839/2000] ---
Total Loss: 1186.3362
MSE Component: 1.1820 (Weighted: 1181.9953)
NLL Component: 4.2538
Min Variance: 7.81e-06
p1=0.239, p2=0.222
--- Iter [1840/2000] ---
Total Loss: 1242.4288
MSE Component: 1.2382 (Weighted: 1238.2437)
NLL Component: 4.0980
Min Variance: 1.46e-05
p1=0.239, p2=0.222

--- Validation at iteration 1840 ---
Average MSE: 366.3672, Average ANEES: 155.7248
-----
--- Iter [1841/2000] ---
Total Loss: 1075.6042
MSE Component: 1.0716 (Weighted: 1071.6436)
NLL Component: 3.8735
Min Variance: 6.68e-06
p1=0.239, p2=0.222
--- Iter [1842/2000] ---
Total Loss: 855.1447
MSE Component: 0.8504 (Weighted: 850.3943)
NLL Component: 4.6633
Min Variance: 7.80e-06
p1=0.239, p2=0.222
--- Iter [1843/2000] ---
Total Loss: 919.0718
MSE Component: 0.9157 (Weighted: 915.6685)
NLL Component: 3.3161
Min Variance: 2.54e-05
p1=0.239, p2=0.222
--- Iter [1844/2000] ---
Total Loss: 923.1802
MSE Component: 0.9186 (Weighted: 918.6189)
NLL Component: 4.4742
Min Variance: 4.70e-06
p1=0.239, p2=0.222
--- Iter [1845/2000] ---
Total Loss: 1004.6921
MSE Component: 1.0012 (Weighted: 1001.1505)
NLL Component: 3.4545

```



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    Min Variance: 2.88e-05
    p1=0.239, p2=0.222
--- Iter [1846/2000] ---
    Total Loss: 924.7872
    MSE Component: 0.9204 (Weighted: 920.4366)
    NLL Component: 4.2634
    Min Variance: 1.80e-05
    p1=0.239, p2=0.222
--- Iter [1847/2000] ---
    Total Loss: 1231.8870
    MSE Component: 1.2279 (Weighted: 1227.8590)
    NLL Component: 3.9409
    Min Variance: 2.08e-06
    p1=0.239, p2=0.222
--- Iter [1848/2000] ---
    Total Loss: 1255.8539
    MSE Component: 1.2519 (Weighted: 1251.9321)
    NLL Component: 3.8346
    Min Variance: 2.16e-05
    p1=0.239, p2=0.222
--- Iter [1849/2000] ---
    Total Loss: 903.5295
    MSE Component: 0.9002 (Weighted: 900.1520)
    NLL Component: 3.2904
    Min Variance: 2.00e-05
    p1=0.239, p2=0.222
--- Iter [1850/2000] ---
    Total Loss: 1118.0455
    MSE Component: 1.1140 (Weighted: 1113.9802)
    NLL Component: 3.9782
    Min Variance: 1.24e-05
    p1=0.239, p2=0.222

--- Validation at iteration 1850 ---
    Average MSE: 316.2144, Average ANEES: 104.1846
-----
--- Iter [1851/2000] ---
    Total Loss: 1132.7971
    MSE Component: 1.1292 (Weighted: 1129.2247)
    NLL Component: 3.4854
    Min Variance: 1.23e-05
    p1=0.239, p2=0.222
--- Iter [1852/2000] ---
    Total Loss: 991.9121
    MSE Component: 0.9882 (Weighted: 988.1503)
    NLL Component: 3.6747
    Min Variance: 8.19e-06
    p1=0.239, p2=0.222

```

```

--- Iter [1853/2000] ---
Total Loss: 968.1983
MSE Component: 0.9641 (Weighted: 964.1053)
NLL Component: 4.0058
Min Variance: 1.67e-05
p1=0.239, p2=0.222
--- Iter [1854/2000] ---
Total Loss: 971.1870
MSE Component: 0.9679 (Weighted: 967.9480)
NLL Component: 3.1518
Min Variance: 2.23e-05
p1=0.239, p2=0.222
--- Iter [1855/2000] ---
Total Loss: 1244.8760
MSE Component: 1.2411 (Weighted: 1241.0660)
NLL Component: 3.7228
Min Variance: 8.27e-06
p1=0.239, p2=0.222
--- Iter [1856/2000] ---
Total Loss: 985.2451
MSE Component: 0.9815 (Weighted: 981.5323)
NLL Component: 3.6256
Min Variance: 1.48e-05
p1=0.239, p2=0.222
--- Iter [1857/2000] ---
Total Loss: 769.9998
MSE Component: 0.7660 (Weighted: 765.9781)
NLL Component: 3.9345
Min Variance: 4.11e-06
p1=0.239, p2=0.222
--- Iter [1858/2000] ---
Total Loss: 1046.5103
MSE Component: 1.0412 (Weighted: 1041.2409)
NLL Component: 5.1821
Min Variance: 1.11e-05
p1=0.239, p2=0.222
--- Iter [1859/2000] ---
Total Loss: 871.0116
MSE Component: 0.8679 (Weighted: 867.9388)
NLL Component: 2.9857
Min Variance: 8.69e-06
p1=0.239, p2=0.222
--- Iter [1860/2000] ---
Total Loss: 849.7281
MSE Component: 0.8473 (Weighted: 847.2679)
NLL Component: 2.3730
Min Variance: 1.23e-05
p1=0.239, p2=0.222

```

```

--- Validation at iteration 1860 ---
Average MSE: 339.5854, Average ANEES: 101.3511
-----
--- Iter [1861/2000] ---
Total Loss: 825.8134
MSE Component: 0.8224 (Weighted: 822.4162)
NLL Component: 3.3101
Min Variance: 8.48e-06
p1=0.239, p2=0.222
--- Iter [1862/2000] ---
Total Loss: 988.1498
MSE Component: 0.9841 (Weighted: 984.0613)
NLL Component: 4.0014
Min Variance: 2.59e-05
p1=0.239, p2=0.222
--- Iter [1863/2000] ---
Total Loss: 1107.7721
MSE Component: 1.1042 (Weighted: 1104.2022)
NLL Component: 3.4828
Min Variance: 2.42e-05
p1=0.239, p2=0.222
--- Iter [1864/2000] ---
Total Loss: 1018.4161
MSE Component: 1.0149 (Weighted: 1014.9366)
NLL Component: 3.3923
Min Variance: 9.90e-06
p1=0.239, p2=0.222
--- Iter [1865/2000] ---
Total Loss: 999.4895
MSE Component: 0.9952 (Weighted: 995.2495)
NLL Component: 4.1528
Min Variance: 2.10e-06
p1=0.239, p2=0.222
--- Iter [1866/2000] ---
Total Loss: 1054.4100
MSE Component: 1.0503 (Weighted: 1050.3482)
NLL Component: 3.9747
Min Variance: 1.62e-05
p1=0.239, p2=0.222
--- Iter [1867/2000] ---
Total Loss: 946.4632
MSE Component: 0.9420 (Weighted: 941.9724)
NLL Component: 4.4037
Min Variance: 9.20e-06
p1=0.239, p2=0.222
--- Iter [1868/2000] ---
Total Loss: 1212.6545

```

```

MSE Component: 1.2086 (Weighted: 1208.6051)
NLL Component: 3.9623
Min Variance: 1.04e-05
p1=0.239, p2=0.222
--- Iter [1869/2000] ---
Total Loss: 1121.1826
MSE Component: 1.1169 (Weighted: 1116.8886)
NLL Component: 4.2068
Min Variance: 9.95e-06
p1=0.239, p2=0.222
--- Iter [1870/2000] ---
Total Loss: 1129.9885
MSE Component: 1.1271 (Weighted: 1127.0657)
NLL Component: 2.8357
Min Variance: 2.42e-05
p1=0.239, p2=0.222

--- Validation at iteration 1870 ---
Average MSE: 297.0437, Average ANEES: 139.6356
-----
--- Iter [1871/2000] ---
Total Loss: 989.1965
MSE Component: 0.9843 (Weighted: 984.3296)
NLL Component: 4.7797
Min Variance: 1.46e-05
p1=0.239, p2=0.222
--- Iter [1872/2000] ---
Total Loss: 914.9333
MSE Component: 0.9124 (Weighted: 912.3977)
NLL Component: 2.4485
Min Variance: 1.50e-05
p1=0.239, p2=0.222
--- Iter [1873/2000] ---
Total Loss: 1059.9083
MSE Component: 1.0564 (Weighted: 1056.4250)
NLL Component: 3.3962
Min Variance: 2.43e-05
p1=0.239, p2=0.222
--- Iter [1874/2000] ---
Total Loss: 991.8111
MSE Component: 0.9888 (Weighted: 988.8075)
NLL Component: 2.9165
Min Variance: 1.01e-05
p1=0.239, p2=0.222
--- Iter [1875/2000] ---
Total Loss: 1028.2115
MSE Component: 1.0244 (Weighted: 1024.3744)
NLL Component: 3.7500

```

```

    Min Variance: 1.47e-05
    p1=0.239, p2=0.222
--- Iter [1876/2000] ---
    Total Loss: 1285.7491
    MSE Component: 1.2817 (Weighted: 1281.7208)
    NLL Component: 3.9412
    Min Variance: 1.43e-05
    p1=0.239, p2=0.222
--- Iter [1877/2000] ---
    Total Loss: 1037.6622
    MSE Component: 1.0346 (Weighted: 1034.5633)
    NLL Component: 3.0117
    Min Variance: 4.87e-06
    p1=0.239, p2=0.222
--- Iter [1878/2000] ---
    Total Loss: 1474.9928
    MSE Component: 1.4715 (Weighted: 1471.5481)
    NLL Component: 3.3576
    Min Variance: 7.60e-06
    p1=0.239, p2=0.222
--- Iter [1879/2000] ---
    Total Loss: 1004.9549
    MSE Component: 1.0011 (Weighted: 1001.1108)
    NLL Component: 3.7570
    Min Variance: 1.92e-05
    p1=0.239, p2=0.222
--- Iter [1880/2000] ---
    Total Loss: 914.0267
    MSE Component: 0.9098 (Weighted: 909.8380)
    NLL Component: 4.1015
    Min Variance: 9.26e-06
    p1=0.239, p2=0.222

--- Validation at iteration 1880 ---
    Average MSE: 372.3038, Average ANEES: 122.5466
-----
--- Iter [1881/2000] ---
    Total Loss: 1522.9561
    MSE Component: 1.5203 (Weighted: 1520.2943)
    NLL Component: 2.5746
    Min Variance: 1.22e-05
    p1=0.239, p2=0.222
--- Iter [1882/2000] ---
    Total Loss: 1788.3629
    MSE Component: 1.7845 (Weighted: 1784.4657)
    NLL Component: 3.8100
    Min Variance: 4.75e-06
    p1=0.239, p2=0.222

```

```

--- Iter [1883/2000] ---
Total Loss: 1388.9720
MSE Component: 1.3841 (Weighted: 1384.0994)
NLL Component: 4.7855
Min Variance: 1.57e-05
p1=0.239, p2=0.222
--- Iter [1884/2000] ---
Total Loss: 2019.7233
MSE Component: 2.0154 (Weighted: 2015.3975)
NLL Component: 4.2385
Min Variance: 7.72e-06
p1=0.239, p2=0.222
--- Iter [1885/2000] ---
Total Loss: 906.6537
MSE Component: 0.9026 (Weighted: 902.6314)
NLL Component: 3.9351
Min Variance: 1.28e-05
p1=0.239, p2=0.222
--- Iter [1886/2000] ---
Total Loss: 1166.7880
MSE Component: 1.1632 (Weighted: 1163.1614)
NLL Component: 3.5394
Min Variance: 9.18e-06
p1=0.239, p2=0.222
--- Iter [1887/2000] ---
Total Loss: 1123.1196
MSE Component: 1.1191 (Weighted: 1119.1489)
NLL Component: 3.8836
Min Variance: 1.83e-06
p1=0.238, p2=0.222
--- Iter [1888/2000] ---
Total Loss: 1073.0170
MSE Component: 1.0696 (Weighted: 1069.5909)
NLL Component: 3.3389
Min Variance: 1.80e-05
p1=0.238, p2=0.222
--- Iter [1889/2000] ---
Total Loss: 1098.5581
MSE Component: 1.0954 (Weighted: 1095.3958)
NLL Component: 3.0752
Min Variance: 1.08e-05
p1=0.238, p2=0.222
--- Iter [1890/2000] ---
Total Loss: 1203.3595
MSE Component: 1.1989 (Weighted: 1198.8841)
NLL Component: 4.3882
Min Variance: 3.17e-05
p1=0.238, p2=0.222

```

```

--- Validation at iteration 1890 ---
Average MSE: 388.3340, Average ANEES: 71.8241
-----
--- Iter [1891/2000] ---
Total Loss: 1083.3788
MSE Component: 1.0799 (Weighted: 1079.9326)
NLL Component: 3.3590
Min Variance: 9.08e-06
p1=0.238, p2=0.222
--- Iter [1892/2000] ---
Total Loss: 1198.6809
MSE Component: 1.1945 (Weighted: 1194.5171)
NLL Component: 4.0767
Min Variance: 8.14e-06
p1=0.238, p2=0.222
--- Iter [1893/2000] ---
Total Loss: 997.7679
MSE Component: 0.9942 (Weighted: 994.2391)
NLL Component: 3.4417
Min Variance: 3.86e-06
p1=0.238, p2=0.222
--- Iter [1894/2000] ---
Total Loss: 1027.4850
MSE Component: 1.0247 (Weighted: 1024.6637)
NLL Component: 2.7341
Min Variance: 1.32e-05
p1=0.238, p2=0.222
--- Iter [1895/2000] ---
Total Loss: 1157.2833
MSE Component: 1.1533 (Weighted: 1153.2770)
NLL Component: 3.9191
Min Variance: 1.61e-05
p1=0.238, p2=0.222
--- Iter [1896/2000] ---
Total Loss: 1158.1589
MSE Component: 1.1551 (Weighted: 1155.0566)
NLL Component: 3.0152
Min Variance: 1.81e-05
p1=0.238, p2=0.222
--- Iter [1897/2000] ---
Total Loss: 980.2095
MSE Component: 0.9762 (Weighted: 976.1607)
NLL Component: 3.9617
Min Variance: 1.01e-05
p1=0.238, p2=0.222
--- Iter [1898/2000] ---
Total Loss: 971.0460

```

```

MSE Component: 0.9672 (Weighted: 967.1996)
NLL Component: 3.7593
Min Variance: 1.94e-05
p1=0.238, p2=0.222
--- Iter [1899/2000] ---
Total Loss: 820.9693
MSE Component: 0.8173 (Weighted: 817.2941)
NLL Component: 3.5881
Min Variance: 1.63e-05
p1=0.238, p2=0.222
--- Iter [1900/2000] ---
Total Loss: 1139.6146
MSE Component: 1.1362 (Weighted: 1136.2336)
NLL Component: 3.2939
Min Variance: 9.37e-06
p1=0.238, p2=0.222

--- Validation at iteration 1900 ---
Average MSE: 396.0742, Average ANEES: 76.4985
-----
--- Iter [1901/2000] ---
Total Loss: 775.3983
MSE Component: 0.7723 (Weighted: 772.2971)
NLL Component: 3.0140
Min Variance: 2.00e-06
p1=0.238, p2=0.222
--- Iter [1902/2000] ---
Total Loss: 1265.5712
MSE Component: 1.2615 (Weighted: 1261.5393)
NLL Component: 3.9447
Min Variance: 1.47e-05
p1=0.238, p2=0.222
--- Iter [1903/2000] ---
Total Loss: 854.1705
MSE Component: 0.8507 (Weighted: 850.7318)
NLL Component: 3.3517
Min Variance: 1.47e-05
p1=0.238, p2=0.222
--- Iter [1904/2000] ---
Total Loss: 885.6108
MSE Component: 0.8822 (Weighted: 882.1556)
NLL Component: 3.3682
Min Variance: 1.23e-05
p1=0.238, p2=0.222
--- Iter [1905/2000] ---
Total Loss: 999.0378
MSE Component: 0.9957 (Weighted: 995.7383)
NLL Component: 3.2125

```



```

    Min Variance: 1.75e-05
    p1=0.238, p2=0.222
--- Iter [1906/2000] ---
    Total Loss: 1141.9373
    MSE Component: 1.1386 (Weighted: 1138.5856)
    NLL Component: 3.2645
    Min Variance: 1.71e-05
    p1=0.238, p2=0.222
--- Iter [1907/2000] ---
    Total Loss: 1099.3407
    MSE Component: 1.0950 (Weighted: 1094.9616)
    NLL Component: 4.2919
    Min Variance: 8.00e-06
    p1=0.238, p2=0.222
--- Iter [1908/2000] ---
    Total Loss: 1914.3129
    MSE Component: 1.9110 (Weighted: 1911.0321)
    NLL Component: 3.1936
    Min Variance: 1.48e-05
    p1=0.238, p2=0.222
--- Iter [1909/2000] ---
    Total Loss: 905.6188
    MSE Component: 0.9016 (Weighted: 901.5635)
    NLL Component: 3.9682
    Min Variance: 1.87e-05
    p1=0.238, p2=0.222
--- Iter [1910/2000] ---
    Total Loss: 987.6838
    MSE Component: 0.9840 (Weighted: 983.9514)
    NLL Component: 3.6452
    Min Variance: 4.84e-06
    p1=0.238, p2=0.222

--- Validation at iteration 1910 ---
    Average MSE: 432.6832, Average ANEES: 86.5257
-----
--- Iter [1911/2000] ---
    Total Loss: 1240.3096
    MSE Component: 1.2373 (Weighted: 1237.2983)
    NLL Component: 2.9242
    Min Variance: 1.40e-05
    p1=0.238, p2=0.222
--- Iter [1912/2000] ---
    Total Loss: 1807.1992
    MSE Component: 1.8031 (Weighted: 1803.0616)
    NLL Component: 4.0504
    Min Variance: 2.53e-05
    p1=0.238, p2=0.222

```

```

--- Iter [1913/2000] ---
Total Loss: 1349.2831
MSE Component: 1.3461 (Weighted: 1346.1300)
NLL Component: 3.0659
Min Variance: 3.05e-05
p1=0.238, p2=0.221
--- Iter [1914/2000] ---
Total Loss: 954.4639
MSE Component: 0.9516 (Weighted: 951.6499)
NLL Component: 2.7269
Min Variance: 9.26e-06
p1=0.238, p2=0.221
--- Iter [1915/2000] ---
Total Loss: 1184.9628
MSE Component: 1.1818 (Weighted: 1181.7510)
NLL Component: 3.1246
Min Variance: 1.71e-05
p1=0.238, p2=0.221
--- Iter [1916/2000] ---
Total Loss: 1214.2426
MSE Component: 1.2113 (Weighted: 1211.2858)
NLL Component: 2.8695
Min Variance: 7.35e-06
p1=0.238, p2=0.221
--- Iter [1917/2000] ---
Total Loss: 1326.3403
MSE Component: 1.3225 (Weighted: 1322.4658)
NLL Component: 3.7873
Min Variance: 1.89e-05
p1=0.238, p2=0.221
--- Iter [1918/2000] ---
Total Loss: 1116.4489
MSE Component: 1.1130 (Weighted: 1112.9667)
NLL Component: 3.3950
Min Variance: 1.89e-05
p1=0.238, p2=0.221
--- Iter [1919/2000] ---
Total Loss: 799.6514
MSE Component: 0.7956 (Weighted: 795.5891)
NLL Component: 3.9752
Min Variance: 1.47e-05
p1=0.238, p2=0.221
--- Iter [1920/2000] ---
Total Loss: 801.5750
MSE Component: 0.7978 (Weighted: 797.7996)
NLL Component: 3.6883
Min Variance: 2.41e-05
p1=0.238, p2=0.221

```

```

--- Validation at iteration 1920 ---
Average MSE: 348.1399, Average ANEES: 82.3652
-----
--- Iter [1921/2000] ---
Total Loss: 983.5858
MSE Component: 0.9801 (Weighted: 980.1475)
NLL Component: 3.3512
Min Variance: 9.31e-06
p1=0.238, p2=0.221
--- Iter [1922/2000] ---
Total Loss: 1255.6180
MSE Component: 1.2518 (Weighted: 1251.8207)
NLL Component: 3.7102
Min Variance: 2.20e-05
p1=0.238, p2=0.221
--- Iter [1923/2000] ---
Total Loss: 983.2918
MSE Component: 0.9811 (Weighted: 981.1301)
NLL Component: 2.0746
Min Variance: 2.23e-05
p1=0.238, p2=0.221
--- Iter [1924/2000] ---
Total Loss: 1196.9138
MSE Component: 1.1934 (Weighted: 1193.4135)
NLL Component: 3.4133
Min Variance: 2.60e-05
p1=0.238, p2=0.221
--- Iter [1925/2000] ---
Total Loss: 910.8536
MSE Component: 0.9067 (Weighted: 906.7394)
NLL Component: 4.0271
Min Variance: 1.84e-05
p1=0.238, p2=0.221
--- Iter [1926/2000] ---
Total Loss: 844.8615
MSE Component: 0.8419 (Weighted: 841.8601)
NLL Component: 2.9143
Min Variance: 1.61e-05
p1=0.238, p2=0.221
--- Iter [1927/2000] ---
Total Loss: 833.5291
MSE Component: 0.8303 (Weighted: 830.3180)
NLL Component: 3.1239
Min Variance: 1.05e-05
p1=0.238, p2=0.221
--- Iter [1928/2000] ---
Total Loss: 869.1215

```

```

MSE Component: 0.8653 (Weighted: 865.2800)
NLL Component: 3.7543
Min Variance: 7.17e-06
p1=0.238, p2=0.221
--- Iter [1929/2000] ---
Total Loss: 1108.0027
MSE Component: 1.1049 (Weighted: 1104.9104)
NLL Component: 3.0051
Min Variance: 1.33e-05
p1=0.238, p2=0.221
--- Iter [1930/2000] ---
Total Loss: 1246.6638
MSE Component: 1.2431 (Weighted: 1243.1048)
NLL Component: 3.4718
Min Variance: 8.04e-06
p1=0.238, p2=0.221

--- Validation at iteration 1930 ---
Average MSE: 369.5567, Average ANEES: 95.4652
-----
--- Iter [1931/2000] ---
Total Loss: 1477.6143
MSE Component: 1.4731 (Weighted: 1473.0688)
NLL Component: 4.4583
Min Variance: 1.26e-05
p1=0.238, p2=0.221
--- Iter [1932/2000] ---
Total Loss: 1108.0046
MSE Component: 1.1046 (Weighted: 1104.6170)
NLL Component: 3.3005
Min Variance: 1.13e-05
p1=0.238, p2=0.221
--- Iter [1933/2000] ---
Total Loss: 1175.1456
MSE Component: 1.1702 (Weighted: 1170.1864)
NLL Component: 4.8721
Min Variance: 1.59e-05
p1=0.238, p2=0.221
--- Iter [1934/2000] ---
Total Loss: 1003.1777
MSE Component: 0.9997 (Weighted: 999.7025)
NLL Component: 3.3882
Min Variance: 2.23e-05
p1=0.238, p2=0.221
--- Iter [1935/2000] ---
Total Loss: 897.2025
MSE Component: 0.8942 (Weighted: 894.2228)
NLL Component: 2.8926

```

```

    Min Variance: 1.53e-05
    p1=0.238, p2=0.221
--- Iter [1936/2000] ---
    Total Loss: 828.2228
    MSE Component: 0.8256 (Weighted: 825.6339)
    NLL Component: 2.5018
    Min Variance: 1.06e-05
    p1=0.238, p2=0.221
--- Iter [1937/2000] ---
    Total Loss: 1003.2429
    MSE Component: 1.0000 (Weighted: 1000.0261)
    NLL Component: 3.1297
    Min Variance: 1.76e-05
    p1=0.238, p2=0.221
--- Iter [1938/2000] ---
    Total Loss: 874.4169
    MSE Component: 0.8713 (Weighted: 871.3234)
    NLL Component: 3.0063
    Min Variance: 1.05e-05
    p1=0.238, p2=0.221
--- Iter [1939/2000] ---
    Total Loss: 788.7725
    MSE Component: 0.7854 (Weighted: 785.3513)
    NLL Component: 3.3341
    Min Variance: 1.55e-05
    p1=0.238, p2=0.221
--- Iter [1940/2000] ---
    Total Loss: 927.8661
    MSE Component: 0.9246 (Weighted: 924.6448)
    NLL Component: 3.1343
    Min Variance: 8.34e-06
    p1=0.238, p2=0.221

--- Validation at iteration 1940 ---
    Average MSE: 331.3683, Average ANEES: 81.2596
-----
--- Iter [1941/2000] ---
    Total Loss: 917.3598
    MSE Component: 0.9140 (Weighted: 913.9886)
    NLL Component: 3.2841
    Min Variance: 8.39e-06
    p1=0.238, p2=0.221
--- Iter [1942/2000] ---
    Total Loss: 1649.4175
    MSE Component: 1.6461 (Weighted: 1646.1332)
    NLL Component: 3.1971
    Min Variance: 1.35e-05
    p1=0.238, p2=0.221

```

```

--- Iter [1943/2000] ---
Total Loss: 1335.9573
MSE Component: 1.3321 (Weighted: 1332.0518)
NLL Component: 3.8183
Min Variance: 1.42e-05
p1=0.238, p2=0.221
--- Iter [1944/2000] ---
Total Loss: 1409.5266
MSE Component: 1.4057 (Weighted: 1405.6615)
NLL Component: 3.7781
Min Variance: 7.15e-06
p1=0.238, p2=0.221
--- Iter [1945/2000] ---
Total Loss: 1314.6945
MSE Component: 1.3109 (Weighted: 1310.8535)
NLL Component: 3.7539
Min Variance: 1.54e-05
p1=0.238, p2=0.221
--- Iter [1946/2000] ---
Total Loss: 1204.1564
MSE Component: 1.2010 (Weighted: 1201.0388)
NLL Component: 3.0305
Min Variance: 1.24e-05
p1=0.237, p2=0.221
--- Iter [1947/2000] ---
Total Loss: 1174.2725
MSE Component: 1.1705 (Weighted: 1170.5256)
NLL Component: 3.6600
Min Variance: 6.83e-06
p1=0.237, p2=0.221
--- Iter [1948/2000] ---
Total Loss: 1019.8493
MSE Component: 1.0161 (Weighted: 1016.1057)
NLL Component: 3.6566
Min Variance: 5.86e-06
p1=0.237, p2=0.221
--- Iter [1949/2000] ---
Total Loss: 951.6790
MSE Component: 0.9485 (Weighted: 948.5293)
NLL Component: 3.0625
Min Variance: 1.06e-05
p1=0.237, p2=0.221
--- Iter [1950/2000] ---
Total Loss: 984.7791
MSE Component: 0.9819 (Weighted: 981.9471)
NLL Component: 2.7449
Min Variance: 4.37e-05
p1=0.237, p2=0.221

```

```

--- Validation at iteration 1950 ---
Average MSE: 368.2911, Average ANEES: 111.2461
-----
--- Iter [1951/2000] ---
Total Loss: 2324.6687
MSE Component: 2.3213 (Weighted: 2321.3177)
NLL Component: 3.2639
Min Variance: 1.33e-05
p1=0.237, p2=0.221
--- Iter [1952/2000] ---
Total Loss: 1077.4701
MSE Component: 1.0742 (Weighted: 1074.2209)
NLL Component: 3.1622
Min Variance: 6.55e-06
p1=0.237, p2=0.221
--- Iter [1953/2000] ---
Total Loss: 1944.8417
MSE Component: 1.9409 (Weighted: 1940.9487)
NLL Component: 3.8059
Min Variance: 2.35e-05
p1=0.237, p2=0.221
--- Iter [1954/2000] ---
Total Loss: 1927.5471
MSE Component: 1.9247 (Weighted: 1924.6855)
NLL Component: 2.7746
Min Variance: 1.25e-05
p1=0.237, p2=0.221
--- Iter [1955/2000] ---
Total Loss: 963.6627
MSE Component: 0.9601 (Weighted: 960.1397)
NLL Component: 3.4358
Min Variance: 3.91e-06
p1=0.237, p2=0.221
--- Iter [1956/2000] ---
Total Loss: 991.3403
MSE Component: 0.9881 (Weighted: 988.1439)
NLL Component: 3.1093
Min Variance: 9.12e-06
p1=0.237, p2=0.221
--- Iter [1957/2000] ---
Total Loss: 1046.5956
MSE Component: 1.0427 (Weighted: 1042.7165)
NLL Component: 3.7920
Min Variance: 5.00e-06
p1=0.237, p2=0.221
--- Iter [1958/2000] ---
Total Loss: 1078.8984

```

```

MSE Component: 1.0749 (Weighted: 1074.9030)
NLL Component: 3.9084
Min Variance: 8.20e-06
p1=0.237, p2=0.221
--- Iter [1959/2000] ---
Total Loss: 1265.6489
MSE Component: 1.2622 (Weighted: 1262.1903)
NLL Component: 3.3716
Min Variance: 2.15e-05
p1=0.237, p2=0.221
--- Iter [1960/2000] ---
Total Loss: 1429.6895
MSE Component: 1.4264 (Weighted: 1426.3561)
NLL Component: 3.2463
Min Variance: 7.51e-06
p1=0.237, p2=0.221

--- Validation at iteration 1960 ---
Average MSE: 339.1074, Average ANEES: 155.2729
-----
--- Iter [1961/2000] ---
Total Loss: 1314.0889
MSE Component: 1.3114 (Weighted: 1311.3749)
NLL Component: 2.6269
Min Variance: 1.10e-05
p1=0.237, p2=0.221
--- Iter [1962/2000] ---
Total Loss: 1327.2827
MSE Component: 1.3237 (Weighted: 1323.6599)
NLL Component: 3.5357
Min Variance: 2.27e-05
p1=0.237, p2=0.221
--- Iter [1963/2000] ---
Total Loss: 1102.8303
MSE Component: 1.1001 (Weighted: 1100.0766)
NLL Component: 2.6668
Min Variance: 1.18e-05
p1=0.237, p2=0.221
--- Iter [1964/2000] ---
Total Loss: 1307.9207
MSE Component: 1.3052 (Weighted: 1305.1932)
NLL Component: 2.6404
Min Variance: 1.75e-05
p1=0.237, p2=0.221
--- Iter [1965/2000] ---
Total Loss: 1124.4819
MSE Component: 1.1220 (Weighted: 1122.0325)
NLL Component: 2.3624

```



```

    Min Variance: 1.69e-05
    p1=0.237, p2=0.221
--- Iter [1966/2000] ---
    Total Loss: 1434.2888
    MSE Component: 1.4304 (Weighted: 1430.4353)
    NLL Component: 3.7665
    Min Variance: 5.62e-06
    p1=0.237, p2=0.221
--- Iter [1967/2000] ---
    Total Loss: 1030.0287
    MSE Component: 1.0267 (Weighted: 1026.6826)
    NLL Component: 3.2590
    Min Variance: 4.99e-06
    p1=0.237, p2=0.221
--- Iter [1968/2000] ---
    Total Loss: 915.2432
    MSE Component: 0.9113 (Weighted: 911.3151)
    NLL Component: 3.8410
    Min Variance: 1.56e-05
    p1=0.237, p2=0.221
--- Iter [1969/2000] ---
    Total Loss: 758.8259
    MSE Component: 0.7554 (Weighted: 755.3984)
    NLL Component: 3.3404
    Min Variance: 1.07e-05
    p1=0.237, p2=0.221
--- Iter [1970/2000] ---
    Total Loss: 1160.1354
    MSE Component: 1.1561 (Weighted: 1156.0903)
    NLL Component: 3.9581
    Min Variance: 1.88e-06
    p1=0.237, p2=0.221

--- Validation at iteration 1970 ---
    Average MSE: 371.6355, Average ANEES: 81.9985
-----
--- Iter [1971/2000] ---
    Total Loss: 1081.6810
    MSE Component: 1.0781 (Weighted: 1078.0858)
    NLL Component: 3.5082
    Min Variance: 1.11e-05
    p1=0.237, p2=0.221
--- Iter [1972/2000] ---
    Total Loss: 1383.6200
    MSE Component: 1.3801 (Weighted: 1380.0534)
    NLL Component: 3.4796
    Min Variance: 1.44e-05
    p1=0.237, p2=0.221

```

```

--- Iter [1973/2000] ---
Total Loss: 1389.8970
MSE Component: 1.3862 (Weighted: 1386.2233)
NLL Component: 3.5866
Min Variance: 7.68e-06
p1=0.237, p2=0.221
--- Iter [1974/2000] ---
Total Loss: 2187.2869
MSE Component: 2.1843 (Weighted: 2184.2687)
NLL Component: 2.9308
Min Variance: 1.50e-05
p1=0.237, p2=0.221
--- Iter [1975/2000] ---
Total Loss: 1160.8928
MSE Component: 1.1570 (Weighted: 1157.0188)
NLL Component: 3.7870
Min Variance: 1.27e-05
p1=0.237, p2=0.221
--- Iter [1976/2000] ---
Total Loss: 1112.0619
MSE Component: 1.1089 (Weighted: 1108.8771)
NLL Component: 3.0977
Min Variance: 9.79e-06
p1=0.237, p2=0.221
--- Iter [1977/2000] ---
Total Loss: 963.8688
MSE Component: 0.9607 (Weighted: 960.7404)
NLL Component: 3.0413
Min Variance: 6.48e-06
p1=0.237, p2=0.221
--- Iter [1978/2000] ---
Total Loss: 831.3459
MSE Component: 0.8269 (Weighted: 826.9329)
NLL Component: 4.3259
Min Variance: 7.49e-06
p1=0.237, p2=0.221
--- Iter [1979/2000] ---
Total Loss: 1196.7550
MSE Component: 1.1939 (Weighted: 1193.8604)
NLL Component: 2.8076
Min Variance: 1.03e-05
p1=0.237, p2=0.221
--- Iter [1980/2000] ---
Total Loss: 3164.7891
MSE Component: 3.1623 (Weighted: 3162.3363)
NLL Component: 2.3654
Min Variance: 3.35e-06
p1=0.237, p2=0.221

```

```

--- Validation at iteration 1980 ---
Average MSE: 424.1296, Average ANEES: 76.3768
-----
--- Iter [1981/2000] ---
Total Loss: 2459.4250
MSE Component: 2.4562 (Weighted: 2456.1656)
NLL Component: 3.1724
Min Variance: 5.29e-06
p1=0.237, p2=0.221
--- Iter [1982/2000] ---
Total Loss: 3311.4495
MSE Component: 3.3085 (Weighted: 3308.5096)
NLL Component: 2.8528
Min Variance: 1.12e-05
p1=0.237, p2=0.221
--- Iter [1983/2000] ---
Total Loss: 2050.9875
MSE Component: 2.0480 (Weighted: 2048.0165)
NLL Component: 2.8838
Min Variance: 9.59e-06
p1=0.237, p2=0.221
--- Iter [1984/2000] ---
Total Loss: 1311.6992
MSE Component: 1.3085 (Weighted: 1308.4908)
NLL Component: 3.1215
Min Variance: 1.88e-05
p1=0.237, p2=0.221
--- Iter [1985/2000] ---
Total Loss: 1861.6210
MSE Component: 1.8588 (Weighted: 1858.8153)
NLL Component: 2.7186
Min Variance: 1.91e-05
p1=0.237, p2=0.221
--- Iter [1986/2000] ---
Total Loss: 1558.5282
MSE Component: 1.5551 (Weighted: 1555.0761)
NLL Component: 3.3650
Min Variance: 1.31e-05
p1=0.237, p2=0.221
--- Iter [1987/2000] ---
Total Loss: 1567.7788
MSE Component: 1.5637 (Weighted: 1563.6967)
NLL Component: 3.9950
Min Variance: 1.37e-05
p1=0.237, p2=0.221
--- Iter [1988/2000] ---
Total Loss: 1419.5430

```

```

MSE Component: 1.4160 (Weighted: 1416.0075)
NLL Component: 3.4484
Min Variance: 2.28e-05
p1=0.237, p2=0.221
--- Iter [1989/2000] ---
Total Loss: 2187.7185
MSE Component: 2.1836 (Weighted: 2183.6405)
NLL Component: 3.9909
Min Variance: 1.39e-05
p1=0.237, p2=0.221
--- Iter [1990/2000] ---
Total Loss: 3004.2031
MSE Component: 3.0007 (Weighted: 3000.7224)
NLL Component: 3.3936
Min Variance: 8.10e-06
p1=0.237, p2=0.221

--- Validation at iteration 1990 ---
Average MSE: 323.5101, Average ANEES: 97.6126
-----
--- Iter [1991/2000] ---
Total Loss: 2719.2644
MSE Component: 2.7151 (Weighted: 2715.0972)
NLL Component: 4.0802
Min Variance: 7.05e-06
p1=0.237, p2=0.221
--- Iter [1992/2000] ---
Total Loss: 5504.5186
MSE Component: 5.4993 (Weighted: 5499.2638)
NLL Component: 5.1681
Min Variance: 7.87e-06
p1=0.237, p2=0.221
--- Iter [1993/2000] ---
Total Loss: 3226.7988
MSE Component: 3.2221 (Weighted: 3222.1119)
NLL Component: 4.5996
Min Variance: 1.23e-05
p1=0.237, p2=0.221
--- Iter [1994/2000] ---
Total Loss: 3456.8376
MSE Component: 3.4527 (Weighted: 3452.6725)
NLL Component: 4.0780
Min Variance: 6.31e-06
p1=0.237, p2=0.221
--- Iter [1995/2000] ---
Total Loss: 2866.5403
MSE Component: 2.8619 (Weighted: 2861.8677)
NLL Component: 4.5855

```

```

    Min Variance: 1.06e-05
    p1=0.237, p2=0.221
--- Iter [1996/2000] ---
    Total Loss: 2927.7107
    MSE Component: 2.9231 (Weighted: 2923.0971)
    NLL Component: 4.5264
    Min Variance: 1.51e-05
    p1=0.237, p2=0.221
--- Iter [1997/2000] ---
    Total Loss: 2171.6604
    MSE Component: 2.1682 (Weighted: 2168.1819)
    NLL Component: 3.3914
    Min Variance: 5.81e-06
    p1=0.237, p2=0.221
--- Iter [1998/2000] ---
    Total Loss: 1660.1429
    MSE Component: 1.6578 (Weighted: 1657.8364)
    NLL Component: 2.2195
    Min Variance: 2.61e-05
    p1=0.237, p2=0.221
--- Iter [1999/2000] ---
    Total Loss: 1230.8456
    MSE Component: 1.2273 (Weighted: 1227.3430)
    NLL Component: 3.4155
    Min Variance: 1.35e-05
    p1=0.237, p2=0.221
--- Iter [2000/2000] ---
    Total Loss: 1267.7500
    MSE Component: 1.2652 (Weighted: 1265.2445)
    NLL Component: 2.4185
    Min Variance: 1.77e-05
    p1=0.237, p2=0.221

--- Validation at iteration 2000 ---
    Average MSE: 488.4022, Average ANEES: 60.4988
    >>> New best VALIDATION ANEES! Saving model. <<<
-----

```

```

Training completed.
Loading best model from iteration 2000 with ANEES 60.4988

```

```

[8]: {'best_val_anees': 60.49876022338867,
      'best_val_nll': 0.0,
      'best_val_mse': 488.4022216796875,
      'best_iter': 2000,
      'final_model': StateBayesianKalmanNet(
        (dnn): DNN_BayesianKalmanNet(

```

```

(input_layer): Sequential(
  (0): Linear(in_features=16, out_features=640, bias=True)
  (1): ReLU()
)
(concrete_dropout1): ConcreteDropout()
(gru): GRU(640, 128)
(output_layer): Sequential(
  (0): Linear(in_features=128, out_features=64, bias=True)
  (1): ReLU()
  (2): Linear(in_features=64, out_features=16, bias=True)
)
(concrete_dropout2): ConcreteDropout()
)
)}

```

```

[ ]: if False:
    import torch
    import os

    # Protože jsi trénink přerušil, nemáme slovník s metrikami automaticky.
    # Musíme uložit přímo model 'state_knet'.

    # 1. Definuj cestu (Metriky si do názvu musíš dopsat ručně podle toho, co
    ↪ jsi viděl v logu naposledy,
    # nebo použij obecný název, abys o model nepřišel).
    save_path = 'best_MSE_BayesianKalmanNet_linear_trajectory-MSE2.3662|ANEES7.
    ↪9216.pth'

    # Pokud si pamatuješ hodnoty z logu (např. ANEES 23.5), můžeš je tam dopsat
    ↪ ručně:
    # save_path = 'best_kalmanet_nclt_sensor_fusion_ANEES23.57_MSE8.
    ↪17_interrupted.pth'

    # 2. Uložení
    # DŮLEŽITÉ: Voláme .state_dict() přímo na objektu state_knet (nebo
    ↪ trained_knet, pokud jsi ho přiřadil)
    # Nepoužíváme závorky ['final_model'], protože state_knet UŽ JE ten model.
    torch.save(state_knet.state_dict(), save_path)

    print(f"\n Záchrana modelu úspěšná! Uloženo do: {save_path}")

if False:
    import os
    # trained_knet = state_knet
    # Přístup k metrikám ve slovníku je správně (přes závorky [])
    print(f"    -> Best ANEES: {trained_knet['best_val_anees']:.4f}")
    print(f"    -> Best MSE:   {trained_knet['best_val_mse']:.4f}")

```

```

    save_path =
    ↪f'best_kalmanFormer_nclt_sensor_fusion_ANEES{trained_knet["best_val_anees"]:.
    ↪4f}_MSE{trained_knet["best_val_mse"]:.4f}_nejlepsi_test_vysledky.pth '

    # OPRAVA: Musíš vytáhnout model ze slovníku pomocí klíče 'final_model'
    # A teprve na něm zavolat .state_dict()
    torch.save(trained_knet['final_model'].state_dict(), save_path)

    print(f"\n Model úspěšně uložen do: {save_path}")

```

Záchrana modelu úspěšná! Uloženo do:  
best\_MSE\_BayesianKalmanNet\_linear\_trajectory-MSE2.3662|ANEES7.9216.pth

```

[10]: import torch
import torch.nn.functional as F
import numpy as np
import Filters
from utils import utils

# =====
# 0. KONFIGURACE A PŘÍPRAVA MODELŮ
# =====
# Parametry pro Bayesovskou inferenci
J_SAMPLES_TEST = 20          # Počet vzorků pro Ensemble

try:
    trained_model_bkn = state_knet
    # DŮLEŽITÉ: Necháme model v módu .train(), aby fungoval Dropout pro Ensemble
    trained_model_bkn.train()

    print(f"INFO: BayesianKalmanNet připraven (Ensemble size={J_SAMPLES_TEST},
    ↪BEZ Noise Floor).")
except NameError:
    raise NameError("Chyba: Proměnná 'state_knet' neexistuje. Spusťte nejprve
    ↪trénink.")

# Inicializace klasických filtrů
print("Inicializuji EKF, UKF, PF, AKF...")
ekf_filter = Filters.ExtendedKalmanFilter(sys_model)
ukf_filter = Filters.UnscentedKalmanFilter(sys_model)
pf_filter = Filters.ParticleFilter(sys_model, num_particles=10000)
akf_filter = Filters.AdaptiveKalmanFilter(sys_model, mdm_L=4, mdm_version=1)
kf_filter = Filters.KalmanFilter(sys_model)

# =====
# 1. VYHODNOCOVACÍ SMYČKA

```

```

# =====
# Seznamy pro ukládání výsledků
mse_knet, anees_knet = [], []
mse_ekf, anees_ekf = [], []
mse_ukf, anees_ukf = [], []
mse_pf, anees_pf = [], []
mse_akf, anees_akf = [], []
mse_kf, anees_kf = [], []

# Počítadla
traj_idx = 0
total_trajectories = len(test_loader.dataset)

print(f"\nVyhodnocuji {total_trajectories} sekvencí z testovací sady...")

with torch.no_grad():
    for x_true_batch, y_meas_batch in test_loader:

        batch_size = x_true_batch.shape[0]

        for i in range(batch_size):
            traj_idx += 1

            # Příprava dat pro jednu trajektorii
            y_seq = y_meas_batch[i].to(device) # [Seq_Len, Obs_Dim]
            x_true = x_true_batch[i].to(device) # [Seq_Len, State_Dim]
            seq_len = y_seq.shape[0]

            # --- PŘÍPRAVA POČÁTEČNÍHO STAVU ---
            knet_init_state = x_true[0, :].unsqueeze(0) # [1, Dim]
            filter_init_state = x_true[0, :].unsqueeze(1) # [Dim, 1]

            # =====
            # A. Bayesian KalmanNet (Ensemble Inference)
            # =====
            ensemble_preds = []

            # 1. Generování J trajektorií (Monte Carlo)
            for j in range(J_SAMPLES_TEST):
                trained_model_bkn.reset(batch_size=1,
↪ initial_state=knet_init_state)

                # Uložíme predikce pro tento sample
                sample_seq = [knet_init_state]

                for t in range(1, seq_len):
                    y_t = y_seq[t, :].unsqueeze(0)

```



```

        # U BKN step vrací (x, reg), reg nás při testu nezajímá
        x_val, _ = trained_model_bkn.step(y_t)
        sample_seq.append(x_val)

    # Spojíme do [Seq_Len, State_Dim]
    ensemble_preds.append(torch.cat(sample_seq, dim=0))

# 2. Statistiky Ensemble (Mean & Variance)
# Shape: [J, Seq_Len, State_Dim]
ensemble_tensor = torch.stack(ensemble_preds, dim=0)

# Průměrná trajektorie (Očekávaná hodnota)
full_x_hat_knet = ensemble_tensor.mean(dim=0)

# Variace modelu (Epistemická nejistota)
# ZDE JE ZMĚNA: Žádný sensor_noise_floor, bereme čistý rozptyl sítě
total_var = ensemble_tensor.var(dim=0)

# Konstrukce plné kovarianční matice P (Diagonal)
# ANEES vyžaduje [Seq_Len, State_Dim, State_Dim]
full_P_hat_knet = torch.zeros(seq_len, m, m, device=device)
for t_step in range(seq_len):
    # Přidáme malé epsilon pro numerickou stabilitu, kdyby byl
    ↪rozptyl 0
    full_P_hat_knet[t_step] = torch.diag(total_var[t_step] + 1e-9)

# =====
# B. Klasické Filtry
# =====

# Adaptive KF
akf_m_res, _, _ = akf_filter.process_sequence_adaptively(y_seq)
full_x_hat_akf = akf_m_res['x_filtered']
full_P_hat_akf = akf_m_res['P_filtered']

# EKF
ekf_res = ekf_filter.process_sequence(y_seq, Ex0=filter_init_state,
    ↪P0=sys_model.P0)
full_x_hat_ekf = ekf_res['x_filtered']
full_P_hat_ekf = ekf_res['P_filtered']

# UKF
ukf_res = ukf_filter.process_sequence(y_seq, Ex0=filter_init_state,
    ↪P0=sys_model.P0)
full_x_hat_ukf = ukf_res['x_filtered']
full_P_hat_ukf = ukf_res['P_filtered']

```

```

# PF
pf_res = pf_filter.process_sequence(y_seq, Ex0=filter_init_state,
↪P0=sys_model.P0)
full_x_hat_pf = pf_res['x_filtered']
full_P_hat_pf = pf_res['P_filtered']

# Standard KF
kf_res = kf_filter.process_sequence(y_seq, Ex0=filter_init_state,
↪P0=sys_model.P0)
full_x_hat_kf = kf_res['x_filtered']
full_P_hat_kf = kf_res['P_filtered']

# =====
# C. Metriky
# =====
# 1. MSE
mse_knet.append(F.mse_loss(full_x_hat_knet[1:], x_true[1:]).item())
mse_ekf.append(F.mse_loss(full_x_hat_ekf[1:], x_true[1:]).item())
mse_ukf.append(F.mse_loss(full_x_hat_ukf[1:], x_true[1:]).item())
mse_pf.append(F.mse_loss(full_x_hat_pf[1:], x_true[1:]).item())
mse_akf.append(F.mse_loss(full_x_hat_akf[1:], x_true[1:]).item())
mse_kf.append(F.mse_loss(full_x_hat_kf[1:], x_true[1:]).item())

# 2. ANEES
def calc_anees_traj(x_true_seq, x_hat_seq, P_hat_seq):
    return utils.calculate_anees_vectorized(
        x_true_seq.unsqueeze(0).cpu(),
        x_hat_seq.unsqueeze(0).cpu(),
        P_hat_seq.unsqueeze(0).cpu()
    )

anees_knet.append(calc_anees_traj(x_true, full_x_hat_knet,
↪full_P_hat_knet))
anees_ekf.append(calc_anees_traj(x_true, full_x_hat_ekf,
↪full_P_hat_ekf))
anees_ukf.append(calc_anees_traj(x_true, full_x_hat_ukf,
↪full_P_hat_ukf))
anees_pf.append(calc_anees_traj(x_true, full_x_hat_pf,
↪full_P_hat_pf))
anees_akf.append(calc_anees_traj(x_true, full_x_hat_akf,
↪full_P_hat_akf))
anees_kf.append(calc_anees_traj(x_true, full_x_hat_kf,
↪full_P_hat_kf))

if traj_idx % 20 == 0:
    print(f" -> Zpracováno {traj_idx}/{total_trajectories}")

```

```

# =====
# 2. FINÁLNÍ VÝPIS
# =====
def avg(lst): return np.mean(lst) if len(lst) > 0 else 0.0

state_dim = sys_model.state_dim

print("\n" + "="*90)
print(f"FINÁLNÍ VÝSLEDKY: BAYESIAN KALMANNET (PURE EPISTEMIC) vs CLASSIC_
↳FILTERS")
print("="*90)
print(f"{'Model':<35} | {'Průměrné MSE':<20} | {'Průměrný ANEES':<20}")
print("-" * 90)
print(f"Cílové ANEES    {state_dim:.2f}")
print("-" * 90)

print(f"{'Bayesian KalmanNet (Ensemble)':<35} | {avg(mse_knet):<20.4f} |_
↳{avg(anees_knet):<20.4f}")
print(f"{'Adaptive KF':<35} | {avg(mse_akf):<20.4f} | {avg(anees_akf):<20.4f}")
print(f"{'Extended KF (EKF)':<35} | {avg(mse_ekf):<20.4f} | {avg(anees_ekf):<20.
↳4f}")
print(f"{'Unscented KF (UKF)':<35} | {avg(mse_ukf):<20.4f} | {avg(anees_ukf):
↳<20.4f}")
print(f"{'Standard KF (Ideal Baseline)':<35} | {avg(mse_kf):<20.4f} |_
↳{avg(anees_kf):<20.4f}")
print(f"{'Particle Filter':<35} | {avg(mse_pf):<20.4f} | {avg(anees_pf):<20.
↳4f}")
print("="*90)

```

INFO: BayesianKalmanNet připraven (Ensemble size=20, BEZ Noise Floor).  
Inicializuji EKF, UKF, PF, AKF...

Vyhodnocuji 1 sekvencí z testovací sady...

Spouštím MDM odhad Q a R...

MDM odhad dokončen.

Odhadnuté Q:

```

[[ 4.13064070e-01 -4.24937501e-02 -5.86073509e-02  1.48873742e-02]
 [-4.24937501e-02  2.73768306e-02  1.39817027e-02 -6.98700785e-05]
 [-5.86073509e-02  1.39817027e-02  3.34790303e-01 -3.45426741e-02]
 [ 1.48873742e-02 -6.98700785e-05 -3.45426741e-02  2.28525577e-02]]

```

Odhadnuté R:

```

[[-1.46430036e-01  1.51903669e-02  2.63280698e-02 -6.06997575e-03]
 [ 1.51903669e-02  1.79104244e-02  1.22167787e-04 -7.55524608e-03]
 [ 2.63280698e-02  1.22167787e-04 -1.19015472e-01  1.38572726e-02]
 [-6.06997575e-03 -7.55524608e-03  1.38572726e-02  1.32357773e-02]]

```

Matice Q a R v Kalmanově filtru byly aktualizovány.

=====

FINÁLNÍ VÝSLEDKY: BAYESIAN KALMANNET (PURE EPISTEMIC) vs CLASSIC FILTERS

=====

Model	Průměrné MSE	Průměrný ANEES
-----		
Cílové ANEES 4.00		
-----		
Bayesian KalmanNet (Ensemble)	2.3662	7.9216
Adaptive KF	1617.5468	1300.6028
Extended KF (EKF)	9.1898	23.4747
Unscented KF (UKF)	9.1898	23.4745
Standard KF (Ideal Baseline)	9.1898	23.4747
Particle Filter	16.6435	246.7317

=====

```
[ ]: import matplotlib.pyplot as plt

# === VIZUALIZACE POSLEDNÍ TESTOVACÍ TRAJEKTORIE ===

# 1. Převod tenzorů na NumPy pole (pro vykreslování)
# Bereme data z poslední iterace předchozí smyčky
gt_np = x_true.cpu().numpy()
knet_np = full_x_hat_knet.cpu().numpy()
ekf_np = full_x_hat_ekf.cpu().numpy()
# (Pokud chceš i UKF, odkomentuj:)
ukf_np = full_x_hat_ukf.cpu().numpy()

# Časová osa (kroky)
time_steps = np.arange(gt_np.shape[0])

# Připomínka indexů (Author's format):
# 0: Pos X, 1: Vel X, 2: Pos Y, 3: Vel Y
idx_px, idx_vx, idx_py, idx_vy = 0, 1, 2, 3

# === GRAF 1: 2D TRAJEKTORIE (MAPA) ===
plt.figure(figsize=(10, 8))
plt.title(f"Porovnání odhadu trajektorie (Testovací sekvence č. {traj_idx})",
         ↪fontsize=14)

# Ground Truth
```

```

plt.plot(gt_np[:, idx_px], gt_np[:, idx_py], 'k-', linewidth=2, label='Ground_
↳ Truth (GT)', alpha=0.8)

# EKF
plt.plot(ekf_np[:, idx_px], ekf_np[:, idx_py], 'r--', linewidth=1.5, label='EKF_
↳ (Standard)')

# KalmanNet
plt.plot(knet_np[:, idx_px], knet_np[:, idx_py], 'b-.', linewidth=2,
↳ label='KalmanNet (Trained)')

# (Volitelně UKF)
plt.plot(ukf_np[:, idx_px], ukf_np[:, idx_py], 'g:', linewidth=1.5,
↳ label='UKF', alpha=0.7)

# Start a Cíl
plt.plot(gt_np[0, idx_px], gt_np[0, idx_py], 'ko', markersize=8, label='Start')
plt.plot(gt_np[-1, idx_px], gt_np[-1, idx_py], 'kx', markersize=8, label='Cíl')

plt.xlabel("Pozice X [m]")
plt.ylabel("Pozice Y [m]")
plt.legend()
plt.grid(True)
plt.axis('equal') # Aby mapa nebyla deformovaná
plt.show()

# === GRAF 2: DETAILNÍ PRŮBĚHY STAVŮ ===
fig, axs = plt.subplots(2, 2, figsize=(15, 10))
fig.suptitle("Detailní průběh stavů v čase", fontsize=16)

# --- Pozice X ---
axs[0, 0].plot(time_steps, gt_np[:, idx_px], 'k-', label='GT')
axs[0, 0].plot(time_steps, ekf_np[:, idx_px], 'r--', label='EKF')
axs[0, 0].plot(time_steps, knet_np[:, idx_px], 'b-.', label='KalmanNet')
axs[0, 0].set_title("Pozice X")
axs[0, 0].set_ylabel("Metry")
axs[0, 0].grid(True)
axs[0, 0].legend()

# --- Pozice Y ---
axs[0, 1].plot(time_steps, gt_np[:, idx_py], 'k-', label='GT')
axs[0, 1].plot(time_steps, ekf_np[:, idx_py], 'r--', label='EKF')
axs[0, 1].plot(time_steps, knet_np[:, idx_py], 'b-.', label='KalmanNet')
axs[0, 1].set_title("Pozice Y")
axs[0, 1].set_ylabel("Metry")
axs[0, 1].grid(True)

```

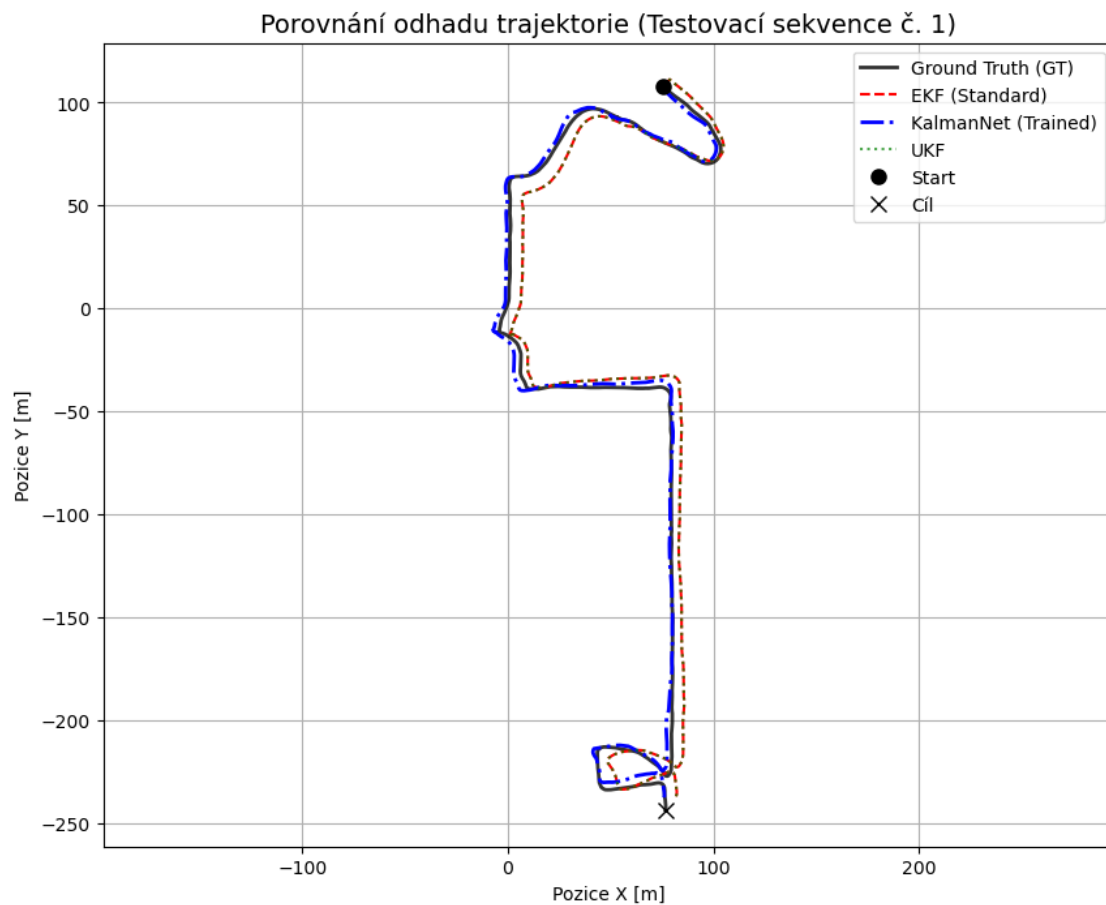
```

# --- Rychlost X ---
axs[1, 0].plot(time_steps, gt_np[:, idx_vx], 'k-', label='GT', alpha=0.5)
axs[1, 0].plot(time_steps, ekf_np[:, idx_vx], 'r--', label='EKF')
axs[1, 0].plot(time_steps, knet_np[:, idx_vx], 'b-.', label='KalmanNet')
axs[1, 0].set_title("Rychlost X (Velocity)")
axs[1, 0].set_ylabel("m/s")
axs[1, 0].grid(True)

# --- Rychlost Y ---
axs[1, 1].plot(time_steps, gt_np[:, idx_vy], 'k-', label='GT', alpha=0.5)
axs[1, 1].plot(time_steps, ekf_np[:, idx_vy], 'r--', label='EKF')
axs[1, 1].plot(time_steps, knet_np[:, idx_vy], 'b-.', label='KalmanNet')
axs[1, 1].set_title("Rychlost Y (Velocity)")
axs[1, 1].set_ylabel("m/s")
axs[1, 1].grid(True)

plt.tight_layout()
plt.show()

```



Detailní průběh stavů v čase

