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In [ ]: import torch
import numpy as np
from torch.autograd import Variable
import time

#Call model of layers and its forward step
from Forward_with_Layer_Setting import Net

device = torch.device("cuda:0" if torch.cuda.is_available() else "cpu")

#Call training functions of Loss functions
from NSpde_loss import lossNSpde
from BoundaryLoss import lossBdry
from InitialConditionLoss import lossIC

def create_network(IC_Only_Train):

    net = Net()
    net = net.to(device)

    #Set final times for running training
    time_slices = np.array([.1,.2, .3, .4, .5, .6, .7, .8, .9, 1]) #

    #Load Training Points
    x_domain, y_domain, t_zero, x_Bdry, y_Bdry, x_l_Bdry, x_u_Bdry, y_l_Bdry, y_u_Bdry = twoDimTrainPts(ne

    start = time.time()

    #Start Training only on IC
    if IC_Only_Train == True:
        print('Training Only on the Initial Condition')
        Create_IC_Parameters(x_domain, y_domain, t_zero, 25000, 10**-3, 'IC_Only.pt', record_loss = 100, p
        IC_Done = time.time()
        print('IC Time:\t', IC_Done-start)

    return 0

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time_vec = [0, 0, 0, 0]

#attempt to load IC if it exists
try:
    net.load_state_dict(torch.load("IC_Only.pt"))
except:
    pass

global epsilon #used to track loss
epsilon = []

print('Training PDE')

for i in range(4):
    #Set loop to optimize in progressively smaller learning rates
    if i == 0:
        #First loop uses progressively increasing time intervals
        print('Executing Pass 1')
        iterations = 20000
        learning_rate = 5*10**-3
    elif i == 1:
        print('Executing Pass 2')
        #time_slices = time_slices[-1]
        iterations = 2 #0000
        learning_rate = 10**-3
    elif i == 2:
        print('Executing Pass 3')
        iterations = 2 #0000
        learning_rate = 5*10**-6
    elif i == 3:
        print('Executing Pass 4')
        iterations = 2 #0000
        learning_rate = 10**-6

    training_loop(net, x_domain, y_domain, t_zero, x_Bdry, y_Bdry, x_l_Bdry, x_u_Bdry,
                  y_l_Bdry, y_u_Bdry, time_slices, iterations, learning_rate, IC_coefficient = 1, record_loss = 1)
    torch.save(net.state_dict(), f"NNlayers_Bubble_{i}.pt")
    np.savetxt('epsilon.txt', epsilon)
    time_vec[i] = time.time()

np.savetxt('epsilon.txt', epsilon)

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end = time.time()

print("Total Time:\t", end-start, '\nPass 1 Time:\t', time_vec[0]-start, '\nPass 2 Time:\t', time_vec[1]-start)

def twoDimTrainPts(net, Domain_collocation, Bdry_collocation):
    #Set of all the recorded xy variables as base data for chasing during training

    # Domain boundary in the range [0, 1]x[0, 2] and time in [0, 1].
    x_l = net.x1_l
    x_u = net.x1_u
    y_l = net.x2_l
    y_u = net.x2_u

    #time starts at lower bound 0, ends at upper bound updated in slices
    t_l = 0

    #Pick IC/NSpde Condition Training Random Points in Numpy
    x_domain = np.random.uniform(low=x_l, high=x_u, size=(Domain_collocation, 1))
    y_domain = np.random.uniform(low=y_l, high=y_u, size=(Domain_collocation, 1))

    #Move to pytorch tensors
    x_domain = Variable(torch.from_numpy(x_domain).float(), requires_grad=True).to(device)
    y_domain = Variable(torch.from_numpy(y_domain).float(), requires_grad=True).to(device)

    #Pick IC Training t starting points to make tensor
    t_zero = Variable(torch.zeros_like(x_domain), requires_grad=True).to(device)

    #Pick BC Training Random Points in Numpy
    x_Bdry = np.random.uniform(low=x_l, high=x_u, size=(Bdry_collocation, 1))
    y_Bdry = np.random.uniform(low=y_l, high=y_u, size=(Bdry_collocation, 1))

    #Move to pytorch tensors
    x_Bdry = Variable(torch.from_numpy(x_Bdry).float(), requires_grad=True).to(device)
    y_Bdry = Variable(torch.from_numpy(y_Bdry).float(), requires_grad=True).to(device)

    ##Pick pts to make tensor for No-Slip Boundary Condition
    x_l_Bdry = Variable(x_l * torch.ones_like(x_Bdry), requires_grad=True).to(device)
    x_u_Bdry = Variable(x_u * torch.ones_like(x_Bdry), requires_grad=True).to(device)
    y_l_Bdry = Variable(y_l * torch.ones_like(x_Bdry), requires_grad=True).to(device)
    y_u_Bdry = Variable(y_u * torch.ones_like(x_Bdry), requires_grad=True).to(device)

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    return x_domain, y_domain, t_zero, x_Bdry, y_Bdry, x_l_Bdry, x_u_Bdry, y_l_Bdry, y_u_Bdry

def tsliceTrainPts(net, Domain_collocation, Bdry_collocation, final_time):
    #Set of all the recorded t variable as base data for chasing during training

    #time starts at lower bound 0, ends at upper bound updated in slices
    t_l = net.t_l

    #Pick IC/NSpde Condition Training Random Points in Numpy
    t_domain = np.random.uniform(low=t_l, high=final_time, size=(Domain_collocation, 1))

    #Move to pytorch tensors
    t_domain = Variable(torch.from_numpy(t_domain).float(), requires_grad=True).to(device)

    #Pick IC Training t starting points to make tensor
    t_zero = Variable(torch.zeros_like(t_domain), requires_grad=True).to(device)

    #Pick BC Training Random Points in Numpy
    t_Bdry = np.random.uniform(low=t_l, high=final_time, size=(Bdry_collocation, 1))

    #Move to pytorch tensors
    t_Bdry = Variable(torch.from_numpy(t_Bdry).float(), requires_grad=True).to(device)

    return t_domain, t_Bdry

def get_lr(optimizer):
    for param_group in optimizer.param_groups:
        return param_group['lr']

def Create_IC_Parameters(x_domain, y_domain, t_zero, iterations, learning_rate, filename, record_loss, print_loss):
    ICnet = Net().to(device)

    IC_Only_training(ICnet, x_domain, y_domain, t_zero, iterations, learning_rate, record_loss, print_loss)

    torch.save(ICnet.state_dict(), filename)

def IC_Only_training(net, x_domain, y_domain, t_zero, iterations, learning_rate, record_loss, print_loss):
    device = torch.device("cuda:0" if torch.cuda.is_available() else "cpu")

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#learning rate update
for g in net.optimizer.param_groups:
    g['lr'] = learning_rate

#training loop
epsilon_IC = [] #placeholder to track decreasing loss
for epoch in range(1, iterations+1):

    # Resetting gradients to zero
    net.optimizer.zero_grad()

    #Loss based on Initial Condition
    loss = lossIC(net, x_domain, y_domain, t_zero)

    loss.backward()

    # Gradient Norm Clipping
    torch.nn.utils.clip_grad_norm_(net.parameters(), max_norm= 5*10**2, norm_type=2, error_if_nonfinite

    #Gradient Value Clipping
    #nn.utils.clip_grad_value_(net.parameters(), clip_value=1.0)

    net.optimizer.step()

    #Print Loss every 1000 Epochs
    with torch.autograd.no_grad():

        if epoch%record_loss == 0:
            epsilon_IC = np.append(epsilon_IC, loss.cpu().detach().numpy())
        if epoch%print_loss == 0:
            print("Iteration:", epoch, "Initial Condition Loss:", loss.data)

    np.savetxt('epsilon_IC.txt', epsilon_IC)

def training_loop(net, x_domain, y_domain, t_zero, x_Bdry, y_Bdry, x_l_Bdry, x_u_Bdry, y_l_Bdry, y_u_Bdry,
global epsilon
device = torch.device("cuda:0" if torch.cuda.is_available() else "cpu")

#learning rate update
for g in net.optimizer.param_groups:

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g['lr'] = learning_rate

for final_time in time_slices:

    with torch.autograd.no_grad():
        print("Current Final Time:", final_time, "Current Learning Rate: ", get_lr(net.optimizer))

    indicator = False
    reset_regularization = 1000

    #Iterate over these points

    t_domain, t_Bdry = tsliceTrainPts(net, Domain_collocation = int(1000), Bdry_collocation = int(100))
    for epoch in range(1, iterations+1):
        # Loss calculation based on partial differential equation (PDE)

        if epoch%reset_regularization == 0:
            indicator = False

        if epoch%reset_regularization != 0: #To detect error on forward/Backward, add hashtag on this v
            #with torch.autograd.detect_anomaly(): #use this line alternatively by deleting hashtag.

            ###Training steps
            # Resetting gradients to zero
            net.optimizer.zero_grad()

            #Loss based on Initial Condition
            mse_IC = lossIC(net, x_domain, y_domain, t_zero)
            # Gradient Norm Clipping
            torch.nn.utils.clip_grad_norm_(net.parameters(), max_norm= 5*10**2, norm_type=1, error_if_n

            #Loss based on Boundary Condition (Containing No-Slip and Free-slip)
            mse_BC_u, mse_BC_phi, mse_BC_mu = lossBdry(net, x_Bdry, y_Bdry, t_Bdry, x_l_Bdry, x_u_Bdry,
            mse_BC = mse_BC_u+ mse_BC_phi+ mse_BC_mu
            # Gradient Norm Clipping
            torch.nn.utils.clip_grad_norm_(net.parameters(), max_norm= 5*10**2, norm_type=1, error_if_n

            #Loss based on PDE
            mse_NS, mse_NSdiv = lossNSpde(net, x_domain, y_domain, t_domain)
            # Gradient Norm Clipping
            torch.nn.utils.clip_grad_norm_(net.parameters(), max_norm= 5*10**2, norm_type=1, error_if_n

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    if indicator == False:
        indicator = True
        IC_regular = mse_IC.detach()
        BC_regular = mse_BC.detach()
        pde_regular = mse_NS.detach()
        pdediv_regular = mse_NSdiv.detach()

    raw_loss = IC_coefficient * mse_IC + mse_BC + mse_NS + mse_NSdiv

    mse_IC = mse_IC #/IC_regular
    mse_BC = mse_BC #/BC_regular
    mse_NS = mse_NS #/pde_regular
    mse_NSdiv = mse_NSdiv #/pddiv_regular

    #Combine all Loss functions
    loss = mse_BC + 10**5 *mse_IC + 10**3 * mse_NS + 10**3 * mse_NSdiv #IC_coefficient *
    # Gradient Norm Clipping
    torch.nn.utils.clip_grad_norm_(net.parameters(), max_norm= 5*10**2, norm_type=1, error_if_nonf:

    loss.backward()
    # Gradient Norm Clipping
    torch.nn.utils.clip_grad_norm_(net.parameters(), max_norm= 5*10**2, norm_type=1, error_if_nonf:

    #Gradient Value Clipping
    #nn.utils.clip_grad_value_(net.parameters(), clip_value=1.0)
    net.optimizer.step()

    #Print Loss every 1000 Epochs
    with torch.autograd.no_grad():
        if epoch%record_loss == 0:
            epsilon = np.append(epsilon, raw_loss.cpu().detach().numpy())
        if epoch%print_loss == 0:
            print("Iteration:", epoch, "\tTotal Loss:", loss.data)
            print("IC Loss: ", mse_IC.data, "\tu BC Loss: ", mse_BC_u.data, "\tphi BC Loss: ", mse

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create_network(True)
create_network(False)

Training Only on the Initial Condition

Iteration: 1000 Initial Condition Loss: tensor(0.0426)
Iteration: 2000 Initial Condition Loss: tensor(0.0178)
Iteration: 3000 Initial Condition Loss: tensor(0.0112)
Iteration: 4000 Initial Condition Loss: tensor(0.0098)
Iteration: 5000 Initial Condition Loss: tensor(0.0094)
Iteration: 6000 Initial Condition Loss: tensor(0.0085)
Iteration: 7000 Initial Condition Loss: tensor(0.0074)
Iteration: 8000 Initial Condition Loss: tensor(0.0065)
Iteration: 9000 Initial Condition Loss: tensor(0.0064)
Iteration: 10000 Initial Condition Loss: tensor(0.0059)
Iteration: 11000 Initial Condition Loss: tensor(0.0057)
Iteration: 12000 Initial Condition Loss: tensor(0.0054)
Iteration: 13000 Initial Condition Loss: tensor(0.0052)
Iteration: 14000 Initial Condition Loss: tensor(0.0049)
Iteration: 15000 Initial Condition Loss: tensor(0.0048)
Iteration: 16000 Initial Condition Loss: tensor(0.0046)
Iteration: 17000 Initial Condition Loss: tensor(0.0045)
Iteration: 18000 Initial Condition Loss: tensor(0.0044)
Iteration: 19000 Initial Condition Loss: tensor(0.0043)
Iteration: 20000 Initial Condition Loss: tensor(0.0042)
Iteration: 21000 Initial Condition Loss: tensor(0.0042)
Iteration: 22000 Initial Condition Loss: tensor(0.0042)
Iteration: 23000 Initial Condition Loss: tensor(0.0041)
Iteration: 24000 Initial Condition Loss: tensor(0.0041)
Iteration: 25000 Initial Condition Loss: tensor(0.0041)
IC Time: 104.03807425498962

Training PDE

Executing Pass 1

Current Final Time: 0.1 Current Learning Rate: 0.005

Iteration: 200 Total Loss: tensor(3.7570e+11)

IC Loss: tensor(4.4509)	u BC Loss: tensor(5.9608)	phi BC Loss: tensor(1975.9426)	mu
BC Loss: tensor(1.7745)	NS PDE Loss: tensor(3.7570e+08)	NS Div Free Loss: tensor(0.0132)	

Iteration: 400 Total Loss: tensor(1.1714e+09)

IC Loss: tensor(5.0341)	u BC Loss: tensor(6.4648)	phi BC Loss: tensor(2991.2219)	mu
BC Loss: tensor(17.6459)	NS PDE Loss: tensor(1170868.2500)	NS Div Free Loss: tensor(0.0366)	

Iteration: 600 Total Loss: tensor(9.4581e+08)

IC Loss: tensor(4.6308)	u BC Loss: tensor(5.6085)	phi BC Loss: tensor(1743.9452)	mu
BC Loss: tensor(28.6406)	NS PDE Loss: tensor(945350.1250)	NS Div Free Loss: tensor(0.0182)	

Iteration: 800 Total Loss: tensor(3.8309e+09)

IC Loss: tensor(5.4329)	u BC Loss: tensor(8.0620)	phi BC Loss: tensor(997.2327)	mu BC Loss:
tensor(36.4145)	NS PDE Loss: tensor(3830332.7500)	NS Div Free Loss: tensor(0.0297)	


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Iteration: 1000      Total Loss: tensor(1.3703e+09)
IC Loss:  tensor(6.4418)      u BC Loss:  tensor(10.7028)      phi BC Loss:  tensor(11765.1807)      mu
BC Loss:  tensor(29.7117)      NS PDE Loss:  tensor(1369681.)      NS Div Free Loss:  tensor(0.0649)
Iteration: 1200      Total Loss: tensor(8.5207e+08)
IC Loss:  tensor(9.7070)      u BC Loss:  tensor(16.6726)      phi BC Loss:  tensor(12787.3145)      mu
BC Loss:  tensor(13.1597)      NS PDE Loss:  tensor(851088.4375)      NS Div Free Loss:  tensor(0.0511)
Iteration: 1400      Total Loss: tensor(1.3305e+10)
IC Loss:  tensor(9.9564)      u BC Loss:  tensor(18.4213)      phi BC Loss:  tensor(35186.4609)      mu
BC Loss:  tensor(9.8725)      NS PDE Loss:  tensor(13303738.)      NS Div Free Loss:  tensor(0.0906)
Iteration: 1600      Total Loss: tensor(1.2532e+09)
IC Loss:  tensor(7.7908)      u BC Loss:  tensor(13.5836)      phi BC Loss:  tensor(4416.5449)      mu
BC Loss:  tensor(7.8879)      NS PDE Loss:  tensor(1252407.1250)      NS Div Free Loss:  tensor(0.1449)
Iteration: 1800      Total Loss: tensor(2.0463e+11)
IC Loss:  tensor(3.4543)      u BC Loss:  tensor(5.6946)      phi BC Loss:  tensor(26869.8691)      mu
BC Loss:  tensor(6.2300)      NS PDE Loss:  tensor(2.0463e+08)      NS Div Free Loss:  tensor(0.1771)
Iteration: 2000      Total Loss: tensor(2.1594e+09)
IC Loss:  tensor(1.5613)      u BC Loss:  tensor(0.9052)      phi BC Loss:  tensor(2978.8628)      mu
BC Loss:  tensor(17.7403)      NS PDE Loss:  tensor(2159208.)      NS Div Free Loss:  tensor(0.0699)
Iteration: 2200      Total Loss: tensor(1.6256e+09)
IC Loss:  tensor(1.1065)      u BC Loss:  tensor(0.2167)      phi BC Loss:  tensor(58295.1836)      mu
BC Loss:  tensor(28.6226)      NS PDE Loss:  tensor(1625465.1250)      NS Div Free Loss:  tensor(0.0419)
Iteration: 2400      Total Loss: tensor(2.8944e+12)
IC Loss:  tensor(1.3312)      u BC Loss:  tensor(0.1454)      phi BC Loss:  tensor(27752.6309)      mu
BC Loss:  tensor(48.5121)      NS PDE Loss:  tensor(2.8944e+09)      NS Div Free Loss:  tensor(0.0782)
Iteration: 2600      Total Loss: tensor(1.8149e+09)
IC Loss:  tensor(1.1272)      u BC Loss:  tensor(0.3094)      phi BC Loss:  tensor(8732.3320)      mu
BC Loss:  tensor(32.2258)      NS PDE Loss:  tensor(1814762.6250)      NS Div Free Loss:  tensor(0.1848)
Iteration: 2800      Total Loss: tensor(1.1759e+09)
IC Loss:  tensor(1.1166)      u BC Loss:  tensor(0.6527)      phi BC Loss:  tensor(4633.3018)      mu
BC Loss:  tensor(15.7264)      NS PDE Loss:  tensor(1175787.6250)      NS Div Free Loss:  tensor(0.2024)
Iteration: 3000      Total Loss: tensor(1.7299e+09)
IC Loss:  tensor(3.9671)      u BC Loss:  tensor(0.4125)      phi BC Loss:  tensor(2341.2537)      mu
BC Loss:  tensor(23.9593)      NS PDE Loss:  tensor(1729474.1250)      NS Div Free Loss:  tensor(0.0958)
Iteration: 3200      Total Loss: tensor(303820.1562)
IC Loss:  tensor(2.7949)      u BC Loss:  tensor(0.0708)      phi BC Loss:  tensor(10.6470)      mu BC Loss:
tensor(11.7937)      NS PDE Loss:  tensor(24.2784)      NS Div Free Loss:  tensor(0.0306)
Iteration: 3400      Total Loss: tensor(140975.8438)
IC Loss:  tensor(1.0235)      u BC Loss:  tensor(0.0561)      phi BC Loss:  tensor(40.3430)      mu BC Loss:
tensor(7.1110)      NS PDE Loss:  tensor(38.5607)      NS Div Free Loss:  tensor(0.0184)
Iteration: 3600      Total Loss: tensor(108494.7344)
IC Loss:  tensor(0.8840)      u BC Loss:  tensor(0.0423)      phi BC Loss:  tensor(2.1034)      mu BC Loss:
tensor(4.5389)      NS PDE Loss:  tensor(20.0770)      NS Div Free Loss:  tensor(0.0114)

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Iteration: 3800      Total Loss: tensor(98619.4766)
IC Loss:  tensor(0.8625)      u BC Loss:  tensor(0.0316)      phi BC Loss:  tensor(1.4081)      mu BC Loss:
tensor(2.6518) NS PDE Loss:  tensor(12.3566)  NS Div Free Loss:  tensor(0.0074)
Iteration: 4000      Total Loss: tensor(107573.7344)
IC Loss:  tensor(0.8510)      u BC Loss:  tensor(0.0225)      phi BC Loss:  tensor(1.3428)      mu BC Loss:
tensor(1.6709) NS PDE Loss:  tensor(22.4677)  NS Div Free Loss:  tensor(0.0044)
Iteration: 4200      Total Loss: tensor(130235.9844)
IC Loss:  tensor(0.8429)      u BC Loss:  tensor(0.0222)      phi BC Loss:  tensor(1.4089)      mu BC Loss:
tensor(1.0054) NS PDE Loss:  tensor(45.9397)  NS Div Free Loss:  tensor(0.0050)
Iteration: 4400      Total Loss: tensor(111453.7188)
IC Loss:  tensor(0.8389)      u BC Loss:  tensor(0.0187)      phi BC Loss:  tensor(1.4748)      mu BC Loss:
tensor(0.6167) NS PDE Loss:  tensor(27.5540)  NS Div Free Loss:  tensor(0.0058)
Iteration: 4600      Total Loss: tensor(106472.6719)
IC Loss:  tensor(0.8340)      u BC Loss:  tensor(0.0166)      phi BC Loss:  tensor(1.6921)      mu BC Loss:
tensor(0.3772) NS PDE Loss:  tensor(23.0609)  NS Div Free Loss:  tensor(0.0052)
Iteration: 4800      Total Loss: tensor(107076.6719)
IC Loss:  tensor(0.8266)      u BC Loss:  tensor(0.0152)      phi BC Loss:  tensor(1.8614)      mu BC Loss:
tensor(0.2632) NS PDE Loss:  tensor(24.4067)  NS Div Free Loss:  tensor(0.0032)
Iteration: 5000      Total Loss: tensor(72552.4062)
IC Loss:  tensor(0.6348)      u BC Loss:  tensor(0.0140)      phi BC Loss:  tensor(5.3330)      mu BC Loss:
tensor(0.1717) NS PDE Loss:  tensor(9.0613)   NS Div Free Loss:  tensor(0.0023)
Iteration: 5200      Total Loss: tensor(73957.9375)
IC Loss:  tensor(0.6150)      u BC Loss:  tensor(0.0146)      phi BC Loss:  tensor(2.6726)      mu BC Loss:
tensor(0.0999) NS PDE Loss:  tensor(12.4532)  NS Div Free Loss:  tensor(0.0027)
Iteration: 5400      Total Loss: tensor(78116.8984)
IC Loss:  tensor(0.6240)      u BC Loss:  tensor(0.0121)      phi BC Loss:  tensor(0.0030)      mu BC Loss:
tensor(0.0739) NS PDE Loss:  tensor(15.7141)  NS Div Free Loss:  tensor(0.0021)
Iteration: 5600      Total Loss: tensor(64623.6172)
IC Loss:  tensor(0.5806)      u BC Loss:  tensor(0.0107)      phi BC Loss:  tensor(9.2271)      mu BC Loss:
tensor(0.0661) NS PDE Loss:  tensor(6.5472)   NS Div Free Loss:  tensor(0.0022)
Iteration: 5800      Total Loss: tensor(11926.4766)
IC Loss:  tensor(0.0635)      u BC Loss:  tensor(0.0070)      phi BC Loss:  tensor(0.0002)      mu BC Loss:
tensor(0.0906) NS PDE Loss:  tensor(5.5773)   NS Div Free Loss:  tensor(0.0023)
Iteration: 6000      Total Loss: tensor(9106.6836)
IC Loss:  tensor(0.0321)      u BC Loss:  tensor(0.0108)      phi BC Loss:  tensor(0.0005)      mu BC Loss:
tensor(0.1068) NS PDE Loss:  tensor(5.8945)   NS Div Free Loss:  tensor(0.0020)
Iteration: 6200      Total Loss: tensor(9807.8965)
IC Loss:  tensor(0.0257)      u BC Loss:  tensor(0.0131)      phi BC Loss:  tensor(9.0346e-05)      mu
BC Loss:  tensor(0.1010)      NS PDE Loss:  tensor(7.2370)   NS Div Free Loss:  tensor(0.0019)
Iteration: 6400      Total Loss: tensor(8531.0264)
IC Loss:  tensor(0.0229)      u BC Loss:  tensor(0.0152)      phi BC Loss:  tensor(5.6602e-05)      mu
BC Loss:  tensor(0.0999)      NS PDE Loss:  tensor(6.2389)   NS Div Free Loss:  tensor(0.0019)

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Iteration: 6600      Total Loss: tensor(5349.2715)
IC Loss:  tensor(0.0210)      u BC Loss:  tensor(0.0170)      phi BC Loss:  tensor(5.3135e-05)      mu
BC Loss:  tensor(0.1057)      NS PDE Loss:  tensor(3.2442)      NS Div Free Loss:  tensor(0.0019)
Iteration: 6800      Total Loss: tensor(51234.0625)
IC Loss:  tensor(0.0198)      u BC Loss:  tensor(0.0185)      phi BC Loss:  tensor(7.3161e-05)      mu
BC Loss:  tensor(0.1378)      NS PDE Loss:  tensor(49.2538)      NS Div Free Loss:  tensor(0.0018)
Iteration: 7000      Total Loss: tensor(8479.5186)
IC Loss:  tensor(0.0191)      u BC Loss:  tensor(0.0177)      phi BC Loss:  tensor(0.0001)      mu BC Loss:
tensor(0.1864) NS PDE Loss:  tensor(6.5631)      NS Div Free Loss:  tensor(0.0016)
Iteration: 7200      Total Loss: tensor(38564.6836)
IC Loss:  tensor(0.0235)      u BC Loss:  tensor(0.0131)      phi BC Loss:  tensor(3.0951e-05)      mu
BC Loss:  tensor(0.2278)      NS PDE Loss:  tensor(36.2171)      NS Div Free Loss:  tensor(0.0017)
Iteration: 7400      Total Loss: tensor(33573.7070)
IC Loss:  tensor(0.0198)      u BC Loss:  tensor(0.0134)      phi BC Loss:  tensor(0.0003)      mu BC Loss:
tensor(0.2504) NS PDE Loss:  tensor(31.5947)      NS Div Free Loss:  tensor(0.0017)
Iteration: 7600      Total Loss: tensor(7781.9307)
IC Loss:  tensor(0.0175)      u BC Loss:  tensor(0.0182)      phi BC Loss:  tensor(0.0012)      mu BC Loss:
tensor(0.3218) NS PDE Loss:  tensor(6.0299)      NS Div Free Loss:  tensor(0.0015)
Iteration: 7800      Total Loss: tensor(6430.6470)
IC Loss:  tensor(0.0166)      u BC Loss:  tensor(0.0189)      phi BC Loss:  tensor(0.0035)      mu BC Loss:
tensor(0.3528) NS PDE Loss:  tensor(4.7668)      NS Div Free Loss:  tensor(0.0015)
Iteration: 8000      Total Loss: tensor(6823.3491)
IC Loss:  tensor(0.0158)      u BC Loss:  tensor(0.0199)      phi BC Loss:  tensor(0.0140)      mu BC Loss:
tensor(0.3672) NS PDE Loss:  tensor(5.2462)      NS Div Free Loss:  tensor(0.0015)
Iteration: 8200      Total Loss: tensor(8723.9287)
IC Loss:  tensor(0.0162)      u BC Loss:  tensor(0.0155)      phi BC Loss:  tensor(0.0404)      mu BC Loss:
tensor(0.5207) NS PDE Loss:  tensor(7.1053)      NS Div Free Loss:  tensor(0.0018)
Iteration: 8400      Total Loss: tensor(8762.1787)
IC Loss:  tensor(0.0174)      u BC Loss:  tensor(0.0154)      phi BC Loss:  tensor(0.1280)      mu BC Loss:
tensor(0.6057) NS PDE Loss:  tensor(7.0180)      NS Div Free Loss:  tensor(0.0020)
Iteration: 8600      Total Loss: tensor(6693.4121)
IC Loss:  tensor(0.0165)      u BC Loss:  tensor(0.0160)      phi BC Loss:  tensor(0.2673)      mu BC Loss:
tensor(0.6697) NS PDE Loss:  tensor(5.0418)      NS Div Free Loss:  tensor(0.0020)
Iteration: 8800      Total Loss: tensor(51072.1758)
IC Loss:  tensor(0.0157)      u BC Loss:  tensor(0.0097)      phi BC Loss:  tensor(0.7103)      mu BC Loss:
tensor(0.6616) NS PDE Loss:  tensor(49.5022)      NS Div Free Loss:  tensor(0.0016)
Iteration: 9000      Total Loss: tensor(11671.4160)
IC Loss:  tensor(0.0147)      u BC Loss:  tensor(0.0105)      phi BC Loss:  tensor(1.5523)      mu BC Loss:
tensor(0.6731) NS PDE Loss:  tensor(10.1966)      NS Div Free Loss:  tensor(0.0015)
Iteration: 9200      Total Loss: tensor(13429.7461)
IC Loss:  tensor(0.0152)      u BC Loss:  tensor(0.0166)      phi BC Loss:  tensor(0.0994)      mu BC Loss:
tensor(0.7447) NS PDE Loss:  tensor(11.9027)      NS Div Free Loss:  tensor(0.0018)

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Iteration: 9400	Total Loss: tensor(6354.5249)		
IC Loss: tensor(0.0133)	u BC Loss: tensor(0.0182)	phi BC Loss: tensor(1.5474)	mu BC Loss:
tensor(0.7489)	NS PDE Loss: tensor(5.0199)	NS Div Free Loss: tensor(0.0019)	
Iteration: 9600	Total Loss: tensor(17630.5020)		
IC Loss: tensor(0.0123)	u BC Loss: tensor(0.0186)	phi BC Loss: tensor(0.9246)	mu BC Loss:
tensor(0.7321)	NS PDE Loss: tensor(16.3971)	NS Div Free Loss: tensor(0.0019)	
Iteration: 9800	Total Loss: tensor(5668.6245)		
IC Loss: tensor(0.0103)	u BC Loss: tensor(0.0198)	phi BC Loss: tensor(0.5376)	mu BC Loss:
tensor(0.7254)	NS PDE Loss: tensor(4.6399)	NS Div Free Loss: tensor(0.0020)	
Iteration: 10000	Total Loss: tensor(8210.4453)		
IC Loss: tensor(0.0095)	u BC Loss: tensor(0.0143)	phi BC Loss: tensor(0.0153)	mu BC Loss:
tensor(0.6563)	NS PDE Loss: tensor(7.2608)	NS Div Free Loss: tensor(0.0016)	
Iteration: 10200	Total Loss: tensor(4505.1763)		
IC Loss: tensor(0.0068)	u BC Loss: tensor(0.0155)	phi BC Loss: tensor(0.0928)	mu BC Loss:
tensor(0.6240)	NS PDE Loss: tensor(3.8194)	NS Div Free Loss: tensor(0.0014)	
Iteration: 10400	Total Loss: tensor(4423.3281)		
IC Loss: tensor(0.0060)	u BC Loss: tensor(0.0164)	phi BC Loss: tensor(0.1027)	mu BC Loss:
tensor(0.5918)	NS PDE Loss: tensor(3.8238)	NS Div Free Loss: tensor(0.0013)	
Iteration: 10600	Total Loss: tensor(4608.2139)		
IC Loss: tensor(0.0056)	u BC Loss: tensor(0.0172)	phi BC Loss: tensor(0.0374)	mu BC Loss:
tensor(0.5557)	NS PDE Loss: tensor(4.0470)	NS Div Free Loss: tensor(0.0013)	
Iteration: 10800	Total Loss: tensor(4243.6641)		
IC Loss: tensor(0.0055)	u BC Loss: tensor(0.0179)	phi BC Loss: tensor(0.0094)	mu BC Loss:
tensor(0.5178)	NS PDE Loss: tensor(3.6906)	NS Div Free Loss: tensor(0.0013)	
Iteration: 11000	Total Loss: tensor(3741.4075)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.0182)	phi BC Loss: tensor(0.0049)	mu BC Loss:
tensor(0.4848)	NS PDE Loss: tensor(3.2103)	NS Div Free Loss: tensor(0.0013)	
Iteration: 11200	Total Loss: tensor(5378.2607)		
IC Loss: tensor(0.0052)	u BC Loss: tensor(0.0186)	phi BC Loss: tensor(0.0016)	mu BC Loss:
tensor(0.5775)	NS PDE Loss: tensor(4.8575)	NS Div Free Loss: tensor(0.0013)	
Iteration: 11400	Total Loss: tensor(3840.0063)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.0196)	phi BC Loss: tensor(0.0009)	mu BC Loss:
tensor(0.5942)	NS PDE Loss: tensor(3.3030)	NS Div Free Loss: tensor(0.0014)	
Iteration: 11600	Total Loss: tensor(2851.3887)		
IC Loss: tensor(0.0051)	u BC Loss: tensor(0.0201)	phi BC Loss: tensor(0.0007)	mu BC Loss:
tensor(0.5776)	NS PDE Loss: tensor(2.3402)	NS Div Free Loss: tensor(0.0014)	
Iteration: 11800	Total Loss: tensor(1583.5870)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.0173)	phi BC Loss: tensor(0.0009)	mu BC Loss:
tensor(0.5398)	NS PDE Loss: tensor(1.0517)	NS Div Free Loss: tensor(0.0014)	
Iteration: 12000	Total Loss: tensor(5521.4268)		
IC Loss: tensor(0.0049)	u BC Loss: tensor(0.0172)	phi BC Loss: tensor(0.0005)	mu BC Loss:
tensor(0.5204)	NS PDE Loss: tensor(5.0293)	NS Div Free Loss: tensor(0.0012)	

Iteration: 12200	Total Loss: tensor(6433.6909)		
IC Loss: tensor(0.0066)	u BC Loss: tensor(0.0112)	phi BC Loss: tensor(0.0006)	mu BC Loss:
tensor(0.5737)	NS PDE Loss: tensor(5.7741)	NS Div Free Loss: tensor(0.0012)	
Iteration: 12400	Total Loss: tensor(20525.2285)		
IC Loss: tensor(0.0055)	u BC Loss: tensor(0.0123)	phi BC Loss: tensor(0.0009)	mu BC Loss:
tensor(0.5930)	NS PDE Loss: tensor(19.9720)	NS Div Free Loss: tensor(0.0012)	
Iteration: 12600	Total Loss: tensor(7295.2866)		
IC Loss: tensor(0.0052)	u BC Loss: tensor(0.0135)	phi BC Loss: tensor(0.0012)	mu BC Loss:
tensor(0.6155)	NS PDE Loss: tensor(6.7773)	NS Div Free Loss: tensor(0.0012)	
Iteration: 12800	Total Loss: tensor(4535.3730)		
IC Loss: tensor(0.0051)	u BC Loss: tensor(0.0138)	phi BC Loss: tensor(0.0011)	mu BC Loss:
tensor(0.6202)	NS PDE Loss: tensor(4.0247)	NS Div Free Loss: tensor(0.0012)	
Iteration: 13000	Total Loss: tensor(5386.2749)		
IC Loss: tensor(0.0052)	u BC Loss: tensor(0.0136)	phi BC Loss: tensor(0.0012)	mu BC Loss:
tensor(0.6101)	NS PDE Loss: tensor(4.8660)	NS Div Free Loss: tensor(0.0012)	
Iteration: 13200	Total Loss: tensor(16787.6191)		
IC Loss: tensor(0.0050)	u BC Loss: tensor(0.0149)	phi BC Loss: tensor(0.0023)	mu BC Loss:
tensor(0.6435)	NS PDE Loss: tensor(16.2882)	NS Div Free Loss: tensor(0.0011)	
Iteration: 13400	Total Loss: tensor(6972.9976)		
IC Loss: tensor(0.0048)	u BC Loss: tensor(0.0167)	phi BC Loss: tensor(0.0018)	mu BC Loss:
tensor(0.7203)	NS PDE Loss: tensor(6.4955)	NS Div Free Loss: tensor(0.0012)	
Iteration: 13600	Total Loss: tensor(4592.9526)		
IC Loss: tensor(0.0048)	u BC Loss: tensor(0.0177)	phi BC Loss: tensor(0.0018)	mu BC Loss:
tensor(0.6781)	NS PDE Loss: tensor(4.1128)	NS Div Free Loss: tensor(0.0012)	
Iteration: 13800	Total Loss: tensor(1960.0552)		
IC Loss: tensor(0.0051)	u BC Loss: tensor(0.0185)	phi BC Loss: tensor(0.0033)	mu BC Loss:
tensor(0.6145)	NS PDE Loss: tensor(1.4523)	NS Div Free Loss: tensor(0.0013)	
Iteration: 14000	Total Loss: tensor(2527.3738)		
IC Loss: tensor(0.0048)	u BC Loss: tensor(0.0190)	phi BC Loss: tensor(0.0011)	mu BC Loss:
tensor(0.5676)	NS PDE Loss: tensor(2.0428)	NS Div Free Loss: tensor(0.0013)	
Iteration: 14200	Total Loss: tensor(3236.5979)		
IC Loss: tensor(0.0048)	u BC Loss: tensor(0.0150)	phi BC Loss: tensor(0.0009)	mu BC Loss:
tensor(0.6505)	NS PDE Loss: tensor(2.7502)	NS Div Free Loss: tensor(0.0013)	
Iteration: 14400	Total Loss: tensor(7324.2422)		
IC Loss: tensor(0.0049)	u BC Loss: tensor(0.0145)	phi BC Loss: tensor(0.0010)	mu BC Loss:
tensor(0.7169)	NS PDE Loss: tensor(6.8351)	NS Div Free Loss: tensor(0.0013)	
Iteration: 14600	Total Loss: tensor(3444.9487)		
IC Loss: tensor(0.0048)	u BC Loss: tensor(0.0146)	phi BC Loss: tensor(0.0011)	mu BC Loss:
tensor(0.7589)	NS PDE Loss: tensor(2.9590)	NS Div Free Loss: tensor(0.0012)	
Iteration: 14800	Total Loss: tensor(9007.8301)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.0114)	phi BC Loss: tensor(0.0002)	mu BC Loss:
tensor(0.7745)	NS PDE Loss: tensor(8.4752)	NS Div Free Loss: tensor(0.0011)	

Iteration: 15000 Total Loss: tensor(10797.6973)
IC Loss: tensor(0.0052) u BC Loss: tensor(0.0117) phi BC Loss: tensor(0.0008) mu BC Loss:
tensor(0.8510) NS PDE Loss: tensor(10.2778) NS Div Free Loss: tensor(0.0010)
Iteration: 15200 Total Loss: tensor(2726.7920)
IC Loss: tensor(0.0047) u BC Loss: tensor(0.0153) phi BC Loss: tensor(0.0010) mu BC Loss:
tensor(0.7714) NS PDE Loss: tensor(2.2586) NS Div Free Loss: tensor(0.0010)
Iteration: 15400 Total Loss: tensor(3140.5264)
IC Loss: tensor(0.0047) u BC Loss: tensor(0.0160) phi BC Loss: tensor(0.0004) mu BC Loss:
tensor(0.6458) NS PDE Loss: tensor(2.6676) NS Div Free Loss: tensor(0.0010)
Iteration: 15600 Total Loss: tensor(3155.8176)
IC Loss: tensor(0.0045) u BC Loss: tensor(0.0164) phi BC Loss: tensor(0.0005) mu BC Loss:
tensor(0.5559) NS PDE Loss: tensor(2.7024) NS Div Free Loss: tensor(0.0010)
Iteration: 15800 Total Loss: tensor(2991.8713)
IC Loss: tensor(0.0045) u BC Loss: tensor(0.0167) phi BC Loss: tensor(0.0005) mu BC Loss:
tensor(0.4982) NS PDE Loss: tensor(2.5424) NS Div Free Loss: tensor(0.0010)
Iteration: 16000 Total Loss: tensor(2427.1121)
IC Loss: tensor(0.0048) u BC Loss: tensor(0.0169) phi BC Loss: tensor(0.0008) mu BC Loss:
tensor(0.4416) NS PDE Loss: tensor(1.9418) NS Div Free Loss: tensor(0.0010)
Iteration: 16200 Total Loss: tensor(7940.4199)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0164) phi BC Loss: tensor(0.0007) mu BC Loss:
tensor(0.5527) NS PDE Loss: tensor(7.4980) NS Div Free Loss: tensor(0.0010)
Iteration: 16400 Total Loss: tensor(3757.8940)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0172) phi BC Loss: tensor(0.0005) mu BC Loss:
tensor(0.5876) NS PDE Loss: tensor(3.3180) NS Div Free Loss: tensor(0.0011)
Iteration: 16600 Total Loss: tensor(3542.1001)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0178) phi BC Loss: tensor(0.0006) mu BC Loss:
tensor(0.5644) NS PDE Loss: tensor(3.0970) NS Div Free Loss: tensor(0.0011)
Iteration: 16800 Total Loss: tensor(2591.2644)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0181) phi BC Loss: tensor(0.0004) mu BC Loss:
tensor(0.5255) NS PDE Loss: tensor(2.1502) NS Div Free Loss: tensor(0.0011)
Iteration: 17000 Total Loss: tensor(1111.8984)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0161) phi BC Loss: tensor(0.0002) mu BC Loss:
tensor(0.5011) NS PDE Loss: tensor(0.6663) NS Div Free Loss: tensor(0.0011)
Iteration: 17200 Total Loss: tensor(2473.8269)
IC Loss: tensor(0.0102) u BC Loss: tensor(0.0147) phi BC Loss: tensor(2.0669) mu BC Loss:
tensor(0.4404) NS PDE Loss: tensor(1.4507) NS Div Free Loss: tensor(0.0010)
Iteration: 17400 Total Loss: tensor(9415.7021)
IC Loss: tensor(0.0084) u BC Loss: tensor(0.0153) phi BC Loss: tensor(0.2614) mu BC Loss:
tensor(0.4649) NS PDE Loss: tensor(8.5726) NS Div Free Loss: tensor(0.0011)
Iteration: 17600 Total Loss: tensor(28907.4316)
IC Loss: tensor(0.0055) u BC Loss: tensor(0.0128) phi BC Loss: tensor(0.1018) mu BC Loss:
tensor(0.5043) NS PDE Loss: tensor(28.3551) NS Div Free Loss: tensor(0.0010)

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Iteration: 17800      Total Loss: tensor(5426.9214)
IC Loss:  tensor(0.0047)      u BC Loss:  tensor(0.0164)      phi BC Loss:  tensor(0.0566)      mu BC Loss:
tensor(0.5256) NS PDE Loss:  tensor(4.9549)      NS Div Free Loss:  tensor(0.0010)
Iteration: 18000      Total Loss: tensor(23873.4570)
IC Loss:  tensor(0.0046)      u BC Loss:  tensor(0.0146)      phi BC Loss:  tensor(0.0667)      mu BC Loss:
tensor(0.5293) NS PDE Loss:  tensor(23.4085)      NS Div Free Loss:  tensor(0.0010)
Iteration: 18200      Total Loss: tensor(7594.5444)
IC Loss:  tensor(0.0045)      u BC Loss:  tensor(0.0168)      phi BC Loss:  tensor(0.0579)      mu BC Loss:
tensor(0.5477) NS PDE Loss:  tensor(7.1469)      NS Div Free Loss:  tensor(0.0010)
Iteration: 18400      Total Loss: tensor(3287.2791)
IC Loss:  tensor(0.0045)      u BC Loss:  tensor(0.0154)      phi BC Loss:  tensor(0.0399)      mu BC Loss:
tensor(0.5645) NS PDE Loss:  tensor(2.8368)      NS Div Free Loss:  tensor(0.0009)
Iteration: 18600      Total Loss: tensor(558.9125)
IC Loss:  tensor(0.0044)      u BC Loss:  tensor(0.0161)      phi BC Loss:  tensor(0.0286)      mu BC Loss:
tensor(0.5561) NS PDE Loss:  tensor(0.1152)      NS Div Free Loss:  tensor(0.0010)
Iteration: 18800      Total Loss: tensor(34644.2148)
IC Loss:  tensor(0.0044)      u BC Loss:  tensor(0.0160)      phi BC Loss:  tensor(0.0204)      mu BC Loss:
tensor(0.5600) NS PDE Loss:  tensor(34.2018)      NS Div Free Loss:  tensor(0.0009)
Iteration: 19000      Total Loss: tensor(26876.1699)
IC Loss:  tensor(0.0049)      u BC Loss:  tensor(0.0175)      phi BC Loss:  tensor(0.0140)      mu BC Loss:
tensor(0.5332) NS PDE Loss:  tensor(26.3865)      NS Div Free Loss:  tensor(0.0009)
Iteration: 19200      Total Loss: tensor(24688.5684)
IC Loss:  tensor(0.0045)      u BC Loss:  tensor(0.0144)      phi BC Loss:  tensor(0.0155)      mu BC Loss:
tensor(0.5358) NS PDE Loss:  tensor(24.2376)      NS Div Free Loss:  tensor(0.0009)
Iteration: 19400      Total Loss: tensor(2832.9124)
IC Loss:  tensor(0.0044)      u BC Loss:  tensor(0.0152)      phi BC Loss:  tensor(0.0122)      mu BC Loss:
tensor(0.5519) NS PDE Loss:  tensor(2.3888)      NS Div Free Loss:  tensor(0.0009)
Iteration: 19600      Total Loss: tensor(14745.2256)
IC Loss:  tensor(0.0044)      u BC Loss:  tensor(0.0157)      phi BC Loss:  tensor(0.0184)      mu BC Loss:
tensor(0.5444) NS PDE Loss:  tensor(14.3029)      NS Div Free Loss:  tensor(0.0009)
Iteration: 19800      Total Loss: tensor(6267.6328)
IC Loss:  tensor(0.0044)      u BC Loss:  tensor(0.0159)      phi BC Loss:  tensor(0.0146)      mu BC Loss:
tensor(0.5376) NS PDE Loss:  tensor(5.8273)      NS Div Free Loss:  tensor(0.0008)
Iteration: 20000      Total Loss: tensor(4527.4858)
IC Loss:  tensor(0.0044)      u BC Loss:  tensor(0.0164)      phi BC Loss:  tensor(0.0145)      mu BC Loss:
tensor(0.4986) NS PDE Loss:  tensor(4.0896)      NS Div Free Loss:  tensor(0.0008)
Current Final Time: 0.2 Current Learning Rate: 0.005
Iteration: 200 Total Loss: tensor(4362.4429)
IC Loss:  tensor(0.0098)      u BC Loss:  tensor(0.0500)      phi BC Loss:  tensor(0.0497)      mu BC Loss:
tensor(0.6159) NS PDE Loss:  tensor(3.3789)      NS Div Free Loss:  tensor(0.0015)
Iteration: 400 Total Loss: tensor(5554.8496)
IC Loss:  tensor(0.0047)      u BC Loss:  tensor(0.0592)      phi BC Loss:  tensor(0.1646)      mu BC Loss:

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tensor(0.5807) NS PDE Loss: tensor(5.0802) NS Div Free Loss: tensor(0.0019)
Iteration: 600 Total Loss: tensor(4698.3438)
IC Loss: tensor(0.0046) u BC Loss: tensor(0.0617) phi BC Loss: tensor(0.1320) mu BC Loss:
tensor(0.6043) NS PDE Loss: tensor(4.2392) NS Div Free Loss: tensor(0.0018)
Iteration: 800 Total Loss: tensor(11186.0879)
IC Loss: tensor(0.0049) u BC Loss: tensor(0.0571) phi BC Loss: tensor(0.0006) mu BC Loss:
tensor(0.6285) NS PDE Loss: tensor(10.6959) NS Div Free Loss: tensor(0.0019)
Iteration: 1000 Total Loss: tensor(5340.0942)
IC Loss: tensor(0.0047) u BC Loss: tensor(0.0581) phi BC Loss: tensor(0.3627) mu BC Loss:
tensor(0.6623) NS PDE Loss: tensor(4.8660) NS Div Free Loss: tensor(0.0022)
Iteration: 1200 Total Loss: tensor(3781.0513)
IC Loss: tensor(0.0045) u BC Loss: tensor(0.0619) phi BC Loss: tensor(0.4384) mu BC Loss:
tensor(0.6817) NS PDE Loss: tensor(3.3269) NS Div Free Loss: tensor(0.0019)
Iteration: 1400 Total Loss: tensor(2032.1215)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0638) phi BC Loss: tensor(0.5998) mu BC Loss:
tensor(0.6881) NS PDE Loss: tensor(1.5849) NS Div Free Loss: tensor(0.0018)
Iteration: 1600 Total Loss: tensor(3936.9475)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0647) phi BC Loss: tensor(0.4404) mu BC Loss:
tensor(0.6932) NS PDE Loss: tensor(3.4911) NS Div Free Loss: tensor(0.0017)
Iteration: 1800 Total Loss: tensor(2951.4819)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0654) phi BC Loss: tensor(0.5063) mu BC Loss:
tensor(0.6935) NS PDE Loss: tensor(2.5076) NS Div Free Loss: tensor(0.0016)
Iteration: 2000 Total Loss: tensor(9859.3516)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0641) phi BC Loss: tensor(0.4898) mu BC Loss:
tensor(0.7011) NS PDE Loss: tensor(9.4132) NS Div Free Loss: tensor(0.0016)
Iteration: 2200 Total Loss: tensor(12135.3486)
IC Loss: tensor(0.0044) u BC Loss: tensor(0.0639) phi BC Loss: tensor(0.9059) mu BC Loss:
tensor(0.7542) NS PDE Loss: tensor(11.6889) NS Div Free Loss: tensor(0.0017)
Iteration: 2400 Total Loss: tensor(1494.1016)
IC Loss: tensor(0.0048) u BC Loss: tensor(0.0552) phi BC Loss: tensor(0.0011) mu BC Loss:
tensor(0.7521) NS PDE Loss: tensor(1.0074) NS Div Free Loss: tensor(0.0021)
Iteration: 2600 Total Loss: tensor(42555.3320)
IC Loss: tensor(0.0052) u BC Loss: tensor(0.0530) phi BC Loss: tensor(0.4129) mu BC Loss:
tensor(0.8143) NS PDE Loss: tensor(42.0324) NS Div Free Loss: tensor(0.0024)
Iteration: 2800 Total Loss: tensor(41400.8633)
IC Loss: tensor(0.0053) u BC Loss: tensor(0.0510) phi BC Loss: tensor(0.6122) mu BC Loss:
tensor(0.9528) NS PDE Loss: tensor(40.8648) NS Div Free Loss: tensor(0.0020)
Iteration: 3000 Total Loss: tensor(46228.6562)
IC Loss: tensor(0.0053) u BC Loss: tensor(0.0514) phi BC Loss: tensor(0.7104) mu BC Loss:
tensor(1.0392) NS PDE Loss: tensor(45.6993) NS Div Free Loss: tensor(0.0017)
Iteration: 3200 Total Loss: tensor(2692.5906)
IC Loss: tensor(0.0047) u BC Loss: tensor(0.0586) phi BC Loss: tensor(0.6067) mu BC Loss:

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tensor(1.0217)	NS PDE Loss:	tensor(2.2211)	NS Div Free Loss:	tensor(0.0016)	
Iteration: 3400	Total Loss:	tensor(1490.7035)			
IC Loss:	tensor(0.0049)	u BC Loss:	tensor(0.0537)	phi BC Loss:	tensor(0.0055) mu BC Loss:
tensor(0.9513)	NS PDE Loss:	tensor(0.9946)	NS Div Free Loss:	tensor(0.0016)	
Iteration: 3600	Total Loss:	tensor(1839.1534)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0602)	phi BC Loss:	tensor(0.2672) mu BC Loss:
tensor(1.0060)	NS PDE Loss:	tensor(1.3840)	NS Div Free Loss:	tensor(0.0019)	
Iteration: 3800	Total Loss:	tensor(5742.0293)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0617)	phi BC Loss:	tensor(0.6905) mu BC Loss:
tensor(0.9904)	NS PDE Loss:	tensor(5.2950)	NS Div Free Loss:	tensor(0.0017)	
Iteration: 4000	Total Loss:	tensor(4193.8682)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0642)	phi BC Loss:	tensor(0.4865) mu BC Loss:
tensor(0.9648)	NS PDE Loss:	tensor(3.7582)	NS Div Free Loss:	tensor(0.0016)	
Iteration: 4200	Total Loss:	tensor(3662.0579)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0648)	phi BC Loss:	tensor(0.4228) mu BC Loss:
tensor(0.9309)	NS PDE Loss:	tensor(3.2289)	NS Div Free Loss:	tensor(0.0016)	
Iteration: 4400	Total Loss:	tensor(1989.8345)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0655)	phi BC Loss:	tensor(0.3460) mu BC Loss:
tensor(0.8937)	NS PDE Loss:	tensor(1.5588)	NS Div Free Loss:	tensor(0.0016)	
Iteration: 4600	Total Loss:	tensor(3749.4832)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0664)	phi BC Loss:	tensor(0.0101) mu BC Loss:
tensor(0.8992)	NS PDE Loss:	tensor(3.2983)	NS Div Free Loss:	tensor(0.0017)	
Iteration: 4800	Total Loss:	tensor(97509.0547)			
IC Loss:	tensor(0.8685)	u BC Loss:	tensor(0.0488)	phi BC Loss:	tensor(0.2895) mu BC Loss:
tensor(0.8947)	NS PDE Loss:	tensor(10.6591)	NS Div Free Loss:	tensor(0.0014)	
Iteration: 5000	Total Loss:	tensor(4324.6338)			
IC Loss:	tensor(0.0046)	u BC Loss:	tensor(0.0590)	phi BC Loss:	tensor(1.1674) mu BC Loss:
tensor(0.8976)	NS PDE Loss:	tensor(3.8584)	NS Div Free Loss:	tensor(0.0021)	
Iteration: 5200	Total Loss:	tensor(2287.0801)			
IC Loss:	tensor(0.0055)	u BC Loss:	tensor(0.0477)	phi BC Loss:	tensor(0.2547) mu BC Loss:
tensor(0.9954)	NS PDE Loss:	tensor(1.7387)	NS Div Free Loss:	tensor(0.0020)	
Iteration: 5400	Total Loss:	tensor(7618.6587)			
IC Loss:	tensor(0.0055)	u BC Loss:	tensor(0.0469)	phi BC Loss:	tensor(0.0120) mu BC Loss:
tensor(1.0529)	NS PDE Loss:	tensor(7.0706)	NS Div Free Loss:	tensor(0.0017)	
Iteration: 5600	Total Loss:	tensor(6225.8540)			
IC Loss:	tensor(0.0054)	u BC Loss:	tensor(0.0471)	phi BC Loss:	tensor(0.0078) mu BC Loss:
tensor(1.1049)	NS PDE Loss:	tensor(5.6834)	NS Div Free Loss:	tensor(0.0015)	
Iteration: 5800	Total Loss:	tensor(5126.7881)			
IC Loss:	tensor(0.0053)	u BC Loss:	tensor(0.0474)	phi BC Loss:	tensor(0.0069) mu BC Loss:
tensor(1.1450)	NS PDE Loss:	tensor(4.5901)	NS Div Free Loss:	tensor(0.0013)	
Iteration: 6000	Total Loss:	tensor(7835.0640)			
IC Loss:	tensor(0.0046)	u BC Loss:	tensor(0.0576)	phi BC Loss:	tensor(0.0115) mu BC Loss:

tensor(1.1603)	NS PDE Loss:	tensor(7.3734)	NS Div Free Loss:	tensor(0.0015)	
Iteration: 6200	Total Loss:	tensor(8689.1875)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0608)	phi BC Loss:	tensor(0.0161) mu BC Loss:
tensor(1.2737)	NS PDE Loss:	tensor(8.2475)	NS Div Free Loss:	tensor(0.0013)	
Iteration: 6400	Total Loss:	tensor(2448.1914)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0625)	phi BC Loss:	tensor(0.0247) mu BC Loss:
tensor(1.2017)	NS PDE Loss:	tensor(2.0087)	NS Div Free Loss:	tensor(0.0014)	
Iteration: 6600	Total Loss:	tensor(3401.8284)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0644)	phi BC Loss:	tensor(0.0439) mu BC Loss:
tensor(1.1362)	NS PDE Loss:	tensor(2.9676)	NS Div Free Loss:	tensor(0.0014)	
Iteration: 6800	Total Loss:	tensor(3069.2559)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0655)	phi BC Loss:	tensor(0.0829) mu BC Loss:
tensor(1.0868)	NS PDE Loss:	tensor(2.6378)	NS Div Free Loss:	tensor(0.0014)	
Iteration: 7000	Total Loss:	tensor(4037.2781)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0663)	phi BC Loss:	tensor(0.1339) mu BC Loss:
tensor(1.0388)	NS PDE Loss:	tensor(3.6072)	NS Div Free Loss:	tensor(0.0014)	
Iteration: 7200	Total Loss:	tensor(2005.9934)			
IC Loss:	tensor(0.0048)	u BC Loss:	tensor(0.0558)	phi BC Loss:	tensor(0.0084) mu BC Loss:
tensor(1.0684)	NS PDE Loss:	tensor(1.5276)	NS Div Free Loss:	tensor(0.0017)	
Iteration: 7400	Total Loss:	tensor(59115.0547)			
IC Loss:	tensor(0.0067)	u BC Loss:	tensor(0.0570)	phi BC Loss:	tensor(1.9739) mu BC Loss:
tensor(1.0931)	NS PDE Loss:	tensor(58.4447)	NS Div Free Loss:	tensor(0.0018)	
Iteration: 7600	Total Loss:	tensor(9644.4189)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0653)	phi BC Loss:	tensor(0.0048) mu BC Loss:
tensor(1.1013)	NS PDE Loss:	tensor(9.2076)	NS Div Free Loss:	tensor(0.0017)	
Iteration: 7800	Total Loss:	tensor(4999.7319)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0585)	phi BC Loss:	tensor(9.3521e-07) mu
BC Loss:	tensor(1.1021)	NS PDE Loss:	tensor(4.5467)	NS Div Free Loss:	tensor(0.0017)
Iteration: 8000	Total Loss:	tensor(4911.6636)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0603)	phi BC Loss:	tensor(0.0003) mu BC Loss:
tensor(1.0868)	NS PDE Loss:	tensor(4.4678)	NS Div Free Loss:	tensor(0.0017)	
Iteration: 8200	Total Loss:	tensor(11806.1895)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0611)	phi BC Loss:	tensor(0.0242) mu BC Loss:
tensor(1.0518)	NS PDE Loss:	tensor(11.3639)	NS Div Free Loss:	tensor(0.0020)	
Iteration: 8400	Total Loss:	tensor(5225.1553)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0658)	phi BC Loss:	tensor(0.0193) mu BC Loss:
tensor(1.0695)	NS PDE Loss:	tensor(4.7939)	NS Div Free Loss:	tensor(0.0019)	
Iteration: 8600	Total Loss:	tensor(3297.9307)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0667)	phi BC Loss:	tensor(0.0684) mu BC Loss:
tensor(1.0437)	NS PDE Loss:	tensor(2.8694)	NS Div Free Loss:	tensor(0.0017)	
Iteration: 8800	Total Loss:	tensor(3786.9854)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0666)	phi BC Loss:	tensor(0.0289) mu BC Loss:

tensor(1.0160)	NS PDE Loss:	tensor(3.3583)	NS Div Free Loss:	tensor(0.0016)	
Iteration: 9000	Total Loss:	tensor(2713.8960)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0671)	phi BC Loss:	tensor(0.0661) mu BC Loss:
tensor(0.9859)	NS PDE Loss:	tensor(2.2898)	NS Div Free Loss:	tensor(0.0014)	
Iteration: 9200	Total Loss:	tensor(6336.4546)			
IC Loss:	tensor(0.0047)	u BC Loss:	tensor(0.0552)	phi BC Loss:	tensor(0.0527) mu BC Loss:
tensor(1.1105)	NS PDE Loss:	tensor(5.8627)	NS Div Free Loss:	tensor(0.0013)	
Iteration: 9400	Total Loss:	tensor(5958.1685)			
IC Loss:	tensor(0.0047)	u BC Loss:	tensor(0.0551)	phi BC Loss:	tensor(0.0473) mu BC Loss:
tensor(1.1935)	NS PDE Loss:	tensor(5.4855)	NS Div Free Loss:	tensor(0.0012)	
Iteration: 9600	Total Loss:	tensor(31916.4863)			
IC Loss:	tensor(0.0049)	u BC Loss:	tensor(0.0527)	phi BC Loss:	tensor(0.4531) mu BC Loss:
tensor(1.2046)	NS PDE Loss:	tensor(31.4252)	NS Div Free Loss:	tensor(0.0013)	
Iteration: 9800	Total Loss:	tensor(7394.1963)			
IC Loss:	tensor(0.0050)	u BC Loss:	tensor(0.0509)	phi BC Loss:	tensor(0.2505) mu BC Loss:
tensor(1.2802)	NS PDE Loss:	tensor(6.8953)	NS Div Free Loss:	tensor(0.0011)	
Iteration: 10000	Total Loss:	tensor(9225.7393)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0589)	phi BC Loss:	tensor(0.1601) mu BC Loss:
tensor(1.3177)	NS PDE Loss:	tensor(8.7799)	NS Div Free Loss:	tensor(0.0011)	
Iteration: 10200	Total Loss:	tensor(10883.8018)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0591)	phi BC Loss:	tensor(0.0597) mu BC Loss:
tensor(1.2399)	NS PDE Loss:	tensor(10.4334)	NS Div Free Loss:	tensor(0.0011)	
Iteration: 10400	Total Loss:	tensor(5057.7637)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0593)	phi BC Loss:	tensor(0.1548) mu BC Loss:
tensor(1.2716)	NS PDE Loss:	tensor(4.6130)	NS Div Free Loss:	tensor(0.0011)	
Iteration: 10600	Total Loss:	tensor(13148.0391)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0613)	phi BC Loss:	tensor(0.0939) mu BC Loss:
tensor(1.2802)	NS PDE Loss:	tensor(12.7109)	NS Div Free Loss:	tensor(0.0011)	
Iteration: 10800	Total Loss:	tensor(6390.3262)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0611)	phi BC Loss:	tensor(0.0458) mu BC Loss:
tensor(1.2425)	NS PDE Loss:	tensor(5.9554)	NS Div Free Loss:	tensor(0.0010)	
Iteration: 11000	Total Loss:	tensor(29206.0703)			
IC Loss:	tensor(0.0046)	u BC Loss:	tensor(0.0553)	phi BC Loss:	tensor(0.0353) mu BC Loss:
tensor(1.2328)	NS PDE Loss:	tensor(28.7476)	NS Div Free Loss:	tensor(0.0010)	
Iteration: 11200	Total Loss:	tensor(11883.1885)			
IC Loss:	tensor(0.0050)	u BC Loss:	tensor(0.0504)	phi BC Loss:	tensor(0.0150) mu BC Loss:
tensor(1.3533)	NS PDE Loss:	tensor(11.3813)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 11400	Total Loss:	tensor(906.7662)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0605)	phi BC Loss:	tensor(0.0133) mu BC Loss:
tensor(1.3593)	NS PDE Loss:	tensor(0.4648)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 11600	Total Loss:	tensor(30863.0723)			
IC Loss:	tensor(0.0046)	u BC Loss:	tensor(0.0601)	phi BC Loss:	tensor(3.8175) mu BC Loss:

tensor(1.2805)	NS PDE Loss:	tensor(30.3983)	NS Div Free Loss:	tensor(0.0011)	
Iteration: 11800	Total Loss:	tensor(32522.2891)			
IC Loss:	tensor(0.0048)	u BC Loss:	tensor(0.0537)	phi BC Loss:	tensor(2.1604) mu BC Loss:
tensor(1.4472)	NS PDE Loss:	tensor(32.0364)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 12000	Total Loss:	tensor(38320.8242)			
IC Loss:	tensor(0.0049)	u BC Loss:	tensor(0.0527)	phi BC Loss:	tensor(1.0534) mu BC Loss:
tensor(1.5287)	NS PDE Loss:	tensor(37.8293)	NS Div Free Loss:	tensor(0.0010)	
Iteration: 12200	Total Loss:	tensor(27704.1504)			
IC Loss:	tensor(0.0049)	u BC Loss:	tensor(0.0528)	phi BC Loss:	tensor(0.5051) mu BC Loss:
tensor(1.5769)	NS PDE Loss:	tensor(27.2121)	NS Div Free Loss:	tensor(0.0010)	
Iteration: 12400	Total Loss:	tensor(38001.2656)			
IC Loss:	tensor(0.0047)	u BC Loss:	tensor(0.0544)	phi BC Loss:	tensor(0.2217) mu BC Loss:
tensor(1.5917)	NS PDE Loss:	tensor(37.5250)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 12600	Total Loss:	tensor(6780.7349)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0587)	phi BC Loss:	tensor(0.1262) mu BC Loss:
tensor(1.5090)	NS PDE Loss:	tensor(6.3356)	NS Div Free Loss:	tensor(0.0010)	
Iteration: 12800	Total Loss:	tensor(13213.5557)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0585)	phi BC Loss:	tensor(0.0742) mu BC Loss:
tensor(1.4197)	NS PDE Loss:	tensor(12.7704)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 13000	Total Loss:	tensor(93706.3750)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0593)	phi BC Loss:	tensor(0.0645) mu BC Loss:
tensor(1.4042)	NS PDE Loss:	tensor(93.2645)	NS Div Free Loss:	tensor(0.0010)	
Iteration: 13200	Total Loss:	tensor(4154.2363)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0599)	phi BC Loss:	tensor(0.0494) mu BC Loss:
tensor(1.3688)	NS PDE Loss:	tensor(3.7155)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 13400	Total Loss:	tensor(13892.0645)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0608)	phi BC Loss:	tensor(0.0466) mu BC Loss:
tensor(1.3997)	NS PDE Loss:	tensor(13.4551)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 13600	Total Loss:	tensor(6265.6108)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0607)	phi BC Loss:	tensor(0.0291) mu BC Loss:
tensor(1.3530)	NS PDE Loss:	tensor(5.8309)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 13800	Total Loss:	tensor(31265.8594)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0576)	phi BC Loss:	tensor(0.0146) mu BC Loss:
tensor(1.3213)	NS PDE Loss:	tensor(30.8186)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 14000	Total Loss:	tensor(1888.5697)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0638)	phi BC Loss:	tensor(0.0249) mu BC Loss:
tensor(1.2964)	NS PDE Loss:	tensor(1.4652)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 14200	Total Loss:	tensor(4695.5820)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0575)	phi BC Loss:	tensor(0.0208) mu BC Loss:
tensor(1.3000)	NS PDE Loss:	tensor(4.2504)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 14400	Total Loss:	tensor(1037.3309)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0630)	phi BC Loss:	tensor(0.0167) mu BC Loss:

tensor(1.2820)	NS PDE Loss:	tensor(0.6129)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 14600	Total Loss:	tensor(18496.5234)			
IC Loss:	tensor(0.0047)	u BC Loss:	tensor(0.0541)	phi BC Loss:	tensor(0.0134) mu BC Loss:
tensor(1.3491)	NS PDE Loss:	tensor(18.0282)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 14800	Total Loss:	tensor(10556.7471)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0561)	phi BC Loss:	tensor(0.0228) mu BC Loss:
tensor(1.4577)	NS PDE Loss:	tensor(10.1007)	NS Div Free Loss:	tensor(0.0007)	
Iteration: 15000	Total Loss:	tensor(11115.2510)			
IC Loss:	tensor(0.0049)	u BC Loss:	tensor(0.0594)	phi BC Loss:	tensor(5.9752) mu BC Loss:
tensor(1.3332)	NS PDE Loss:	tensor(10.6190)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 15200	Total Loss:	tensor(13494.2422)			
IC Loss:	tensor(0.0051)	u BC Loss:	tensor(0.0514)	phi BC Loss:	tensor(3.2109) mu BC Loss:
tensor(1.3628)	NS PDE Loss:	tensor(12.9816)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 15400	Total Loss:	tensor(5392.5884)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0609)	phi BC Loss:	tensor(1.5890) mu BC Loss:
tensor(1.2709)	NS PDE Loss:	tensor(4.9541)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 15600	Total Loss:	tensor(3578.4253)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0629)	phi BC Loss:	tensor(0.8793) mu BC Loss:
tensor(1.2160)	NS PDE Loss:	tensor(3.1511)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 15800	Total Loss:	tensor(3157.3079)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0642)	phi BC Loss:	tensor(0.3626) mu BC Loss:
tensor(1.1734)	NS PDE Loss:	tensor(2.7342)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 16000	Total Loss:	tensor(2722.8530)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0655)	phi BC Loss:	tensor(0.1941) mu BC Loss:
tensor(1.1391)	NS PDE Loss:	tensor(2.3023)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 16200	Total Loss:	tensor(4329.4790)			
IC Loss:	tensor(0.0049)	u BC Loss:	tensor(0.0517)	phi BC Loss:	tensor(0.1389) mu BC Loss:
tensor(1.2273)	NS PDE Loss:	tensor(3.8384)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 16400	Total Loss:	tensor(4206.0781)			
IC Loss:	tensor(0.0049)	u BC Loss:	tensor(0.0512)	phi BC Loss:	tensor(0.0777) mu BC Loss:
tensor(1.2996)	NS PDE Loss:	tensor(3.7123)	NS Div Free Loss:	tensor(0.0007)	
Iteration: 16600	Total Loss:	tensor(18257.9902)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0571)	phi BC Loss:	tensor(0.0440) mu BC Loss:
tensor(1.4198)	NS PDE Loss:	tensor(17.8062)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 16800	Total Loss:	tensor(7024.7783)			
IC Loss:	tensor(0.0046)	u BC Loss:	tensor(0.0563)	phi BC Loss:	tensor(0.0270) mu BC Loss:
tensor(1.5549)	NS PDE Loss:	tensor(6.5652)	NS Div Free Loss:	tensor(0.0008)	
Iteration: 17000	Total Loss:	tensor(20172.0723)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0615)	phi BC Loss:	tensor(0.0166) mu BC Loss:
tensor(1.3682)	NS PDE Loss:	tensor(19.7436)	NS Div Free Loss:	tensor(0.0007)	
Iteration: 17200	Total Loss:	tensor(5987.8535)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0588)	phi BC Loss:	tensor(0.0184) mu BC Loss:

tensor(1.3491)	NS PDE Loss:	tensor(5.5465)	NS Div Free Loss:	tensor(0.0007)	
Iteration: 17400	Total Loss:	tensor(3442.4172)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0590)	phi BC Loss:	tensor(0.0192) mu BC Loss:
tensor(1.3435)	NS PDE Loss:	tensor(3.0028)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 17600	Total Loss:	tensor(12305.3232)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0589)	phi BC Loss:	tensor(0.0184) mu BC Loss:
tensor(1.3136)	NS PDE Loss:	tensor(11.8671)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 17800	Total Loss:	tensor(5533.3330)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0602)	phi BC Loss:	tensor(0.0222) mu BC Loss:
tensor(1.3165)	NS PDE Loss:	tensor(5.0992)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 18000	Total Loss:	tensor(5553.7490)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0634)	phi BC Loss:	tensor(0.0179) mu BC Loss:
tensor(1.3318)	NS PDE Loss:	tensor(5.1296)	NS Div Free Loss:	tensor(0.0007)	
Iteration: 18200	Total Loss:	tensor(11477.0781)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0572)	phi BC Loss:	tensor(0.0118) mu BC Loss:
tensor(1.5224)	NS PDE Loss:	tensor(11.0225)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 18400	Total Loss:	tensor(12331.9023)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0582)	phi BC Loss:	tensor(0.0063) mu BC Loss:
tensor(1.4059)	NS PDE Loss:	tensor(11.8899)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 18600	Total Loss:	tensor(8146.1519)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.0595)	phi BC Loss:	tensor(0.0130) mu BC Loss:
tensor(1.4029)	NS PDE Loss:	tensor(7.7090)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 18800	Total Loss:	tensor(6290.9258)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0603)	phi BC Loss:	tensor(0.0234) mu BC Loss:
tensor(1.3781)	NS PDE Loss:	tensor(5.8574)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 19000	Total Loss:	tensor(4639.6201)			
IC Loss:	tensor(0.0041)	u BC Loss:	tensor(0.0681)	phi BC Loss:	tensor(0.0396) mu BC Loss:
tensor(1.3796)	NS PDE Loss:	tensor(4.2251)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 19200	Total Loss:	tensor(6733.1211)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0661)	phi BC Loss:	tensor(0.0442) mu BC Loss:
tensor(1.3422)	NS PDE Loss:	tensor(6.3150)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 19400	Total Loss:	tensor(42799.3203)			
IC Loss:	tensor(0.0045)	u BC Loss:	tensor(0.0562)	phi BC Loss:	tensor(0.0036) mu BC Loss:
tensor(1.3188)	NS PDE Loss:	tensor(42.3452)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 19600	Total Loss:	tensor(4542.7021)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.0623)	phi BC Loss:	tensor(3.3824) mu BC Loss:
tensor(1.3094)	NS PDE Loss:	tensor(4.1088)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 19800	Total Loss:	tensor(3775.0083)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0658)	phi BC Loss:	tensor(0.0574) mu BC Loss:
tensor(1.2754)	NS PDE Loss:	tensor(3.3549)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 20000	Total Loss:	tensor(3307.3677)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.0672)	phi BC Loss:	tensor(0.0689) mu BC Loss:

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tensor(1.2120) NS PDE Loss: tensor(2.8901)    NS Div Free Loss: tensor(0.0006)
Current Final Time: 0.3 Current Learning Rate: 0.005
Iteration: 200 Total Loss: tensor(10747.1807)
IC Loss: tensor(0.0053)      u BC Loss: tensor(0.1277)      phi BC Loss: tensor(3.4629e-06)      mu
BC Loss: tensor(1.8662)      NS PDE Loss: tensor(10.2128)    NS Div Free Loss: tensor(0.0003)
Iteration: 400 Total Loss: tensor(8646.1982)
IC Loss: tensor(0.0079)      u BC Loss: tensor(0.1033)      phi BC Loss: tensor(1.6131e-05)      mu
BC Loss: tensor(2.0589)      NS PDE Loss: tensor(7.8533)    NS Div Free Loss: tensor(0.0005)
Iteration: 600 Total Loss: tensor(7711.3608)
IC Loss: tensor(0.0084)      u BC Loss: tensor(0.1010)      phi BC Loss: tensor(3.3010e-05)      mu
BC Loss: tensor(2.2784)      NS PDE Loss: tensor(6.8721)    NS Div Free Loss: tensor(0.0004)
Iteration: 800 Total Loss: tensor(6351.3882)
IC Loss: tensor(0.0083)      u BC Loss: tensor(0.1019)      phi BC Loss: tensor(7.3944e-05)      mu
BC Loss: tensor(2.4081)      NS PDE Loss: tensor(5.5197)    NS Div Free Loss: tensor(0.0004)
Iteration: 1000 Total Loss: tensor(62335.4258)
IC Loss: tensor(0.0078)      u BC Loss: tensor(0.1049)      phi BC Loss: tensor(0.0002)      mu BC Loss:
tensor(2.4671) NS PDE Loss: tensor(61.5548)    NS Div Free Loss: tensor(0.0004)
Iteration: 1200 Total Loss: tensor(11795.6816)
IC Loss: tensor(0.0067)      u BC Loss: tensor(0.1120)      phi BC Loss: tensor(0.0043)      mu BC Loss:
tensor(2.4990) NS PDE Loss: tensor(11.1179)    NS Div Free Loss: tensor(0.0005)
Iteration: 1400 Total Loss: tensor(8829.2695)
IC Loss: tensor(0.0051)      u BC Loss: tensor(0.1336)      phi BC Loss: tensor(0.4926)      mu BC Loss:
tensor(2.4691) NS PDE Loss: tensor(8.3203)      NS Div Free Loss: tensor(0.0005)
Iteration: 1600 Total Loss: tensor(3253.4832)
IC Loss: tensor(0.0043)      u BC Loss: tensor(0.1519)      phi BC Loss: tensor(0.0107)      mu BC Loss:
tensor(2.3201) NS PDE Loss: tensor(2.8180)      NS Div Free Loss: tensor(0.0006)
Iteration: 1800 Total Loss: tensor(2841.8440)
IC Loss: tensor(0.0042)      u BC Loss: tensor(0.1575)      phi BC Loss: tensor(0.0116)      mu BC Loss:
tensor(2.2101) NS PDE Loss: tensor(2.4154)      NS Div Free Loss: tensor(0.0006)
Iteration: 2000 Total Loss: tensor(2405.2915)
IC Loss: tensor(0.0042)      u BC Loss: tensor(0.1586)      phi BC Loss: tensor(0.0080)      mu BC Loss:
tensor(2.1282) NS PDE Loss: tensor(1.9819)      NS Div Free Loss: tensor(0.0005)
Iteration: 2200 Total Loss: tensor(6860.8320)
IC Loss: tensor(0.0054)      u BC Loss: tensor(0.1295)      phi BC Loss: tensor(0.0081)      mu BC Loss:
tensor(2.3515) NS PDE Loss: tensor(6.3213)      NS Div Free Loss: tensor(0.0005)
Iteration: 2400 Total Loss: tensor(6538.1138)
IC Loss: tensor(0.0054)      u BC Loss: tensor(0.1289)      phi BC Loss: tensor(0.0120)      mu BC Loss:
tensor(2.5086) NS PDE Loss: tensor(5.9932)      NS Div Free Loss: tensor(0.0005)
Iteration: 2600 Total Loss: tensor(5944.8989)
IC Loss: tensor(0.0053)      u BC Loss: tensor(0.1307)      phi BC Loss: tensor(0.0179)      mu BC Loss:
tensor(2.5777) NS PDE Loss: tensor(5.4122)      NS Div Free Loss: tensor(0.0004)
Iteration: 2800 Total Loss: tensor(5280.5615)

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IC Loss: tensor(0.0052)	u BC Loss: tensor(0.1325)	phi BC Loss: tensor(0.0241)	mu BC Loss: tensor(2.6168)
NS PDE Loss: tensor(4.7591) NS Div Free Loss: tensor(0.0004)			
Iteration: 3000 Total Loss: tensor(36684.6367)			
IC Loss: tensor(0.0050)	u BC Loss: tensor(0.1348)	phi BC Loss: tensor(0.0300)	mu BC Loss: tensor(2.6172)
NS PDE Loss: tensor(36.1803) NS Div Free Loss: tensor(0.0004)			
Iteration: 3200 Total Loss: tensor(14358.2754)			
IC Loss: tensor(0.0060)	u BC Loss: tensor(0.1199)	phi BC Loss: tensor(5.8383e-09)	mu BC Loss: tensor(2.6072)
NS PDE Loss: tensor(13.7531) NS Div Free Loss: tensor(0.0004)			
Iteration: 3400 Total Loss: tensor(13798.6797)			
IC Loss: tensor(0.0051)	u BC Loss: tensor(0.1331)	phi BC Loss: tensor(3.0084e-08)	mu BC Loss: tensor(2.6486)
NS PDE Loss: tensor(13.2836) NS Div Free Loss: tensor(0.0004)			
Iteration: 3600 Total Loss: tensor(15781.0127)			
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.1309)	phi BC Loss: tensor(1.3410e-07)	mu BC Loss: tensor(2.7213)
NS PDE Loss: tensor(15.2457) NS Div Free Loss: tensor(0.0005)			
Iteration: 3800 Total Loss: tensor(14388.7764)			
IC Loss: tensor(0.0054)	u BC Loss: tensor(0.1305)	phi BC Loss: tensor(4.2978e-07)	mu BC Loss: tensor(2.8281)
NS PDE Loss: tensor(13.8488) NS Div Free Loss: tensor(0.0005)			
Iteration: 4000 Total Loss: tensor(4403.7163)			
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.1310)	phi BC Loss: tensor(1.5425e-05)	mu BC Loss: tensor(2.8399)
NS PDE Loss: tensor(3.8727) NS Div Free Loss: tensor(0.0004)			
Iteration: 4200 Total Loss: tensor(1844.1110)			
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1504)	phi BC Loss: tensor(0.0006)	mu BC Loss: tensor(2.6032)
NS PDE Loss: tensor(1.4051) NS Div Free Loss: tensor(0.0005)			
Iteration: 4400 Total Loss: tensor(6920.2598)			
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1521)	phi BC Loss: tensor(0.0109)	mu BC Loss: tensor(2.6368)
NS PDE Loss: tensor(6.4819) NS Div Free Loss: tensor(0.0005)			
Iteration: 4600 Total Loss: tensor(4032.3086)			
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1530)	phi BC Loss: tensor(0.0788)	mu BC Loss: tensor(2.6430)
NS PDE Loss: tensor(3.5959) NS Div Free Loss: tensor(0.0005)			
Iteration: 4800 Total Loss: tensor(17856.5391)			
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1534)	phi BC Loss: tensor(0.1239)	mu BC Loss: tensor(2.5896)
NS PDE Loss: tensor(17.4241) NS Div Free Loss: tensor(0.0004)			
Iteration: 5000 Total Loss: tensor(5199.5405)			
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.1464)	phi BC Loss: tensor(1.3553e-06)	mu BC Loss: tensor(2.5596)
NS PDE Loss: tensor(4.7508) NS Div Free Loss: tensor(0.0004)			
Iteration: 5200 Total Loss: tensor(4121.4707)			
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1497)	phi BC Loss: tensor(3.9919e-05)	mu BC Loss: tensor(2.5410)
NS PDE Loss: tensor(3.6793) NS Div Free Loss: tensor(0.0004)			
Iteration: 5400 Total Loss: tensor(6298.8950)			
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1576)	phi BC Loss: tensor(0.0800)	mu BC Loss: tensor(2.4553)
NS PDE Loss: tensor(5.8755) NS Div Free Loss: tensor(0.0005)			
Iteration: 5600 Total Loss: tensor(2873.7485)			

IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1628)	phi BC Loss: tensor(0.1836)	mu BC Loss: tensor(2.3866)
NS PDE Loss: tensor(2.4569)		NS Div Free Loss: tensor(0.0005)	
Iteration: 5800 Total Loss: tensor(3192.0142)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1631)	phi BC Loss: tensor(0.2024)	mu BC Loss: tensor(2.3271)
NS PDE Loss: tensor(2.7742)		NS Div Free Loss: tensor(0.0005)	
Iteration: 6000 Total Loss: tensor(2327.0830)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1627)	phi BC Loss: tensor(0.2119)	mu BC Loss: tensor(2.2704)
NS PDE Loss: tensor(1.9100)		NS Div Free Loss: tensor(0.0004)	
Iteration: 6200 Total Loss: tensor(12235.4268)			
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.1479)	phi BC Loss: tensor(1.6263e-06)	mu BC Loss: tensor(2.4552)
NS PDE Loss: tensor(11.7839)		NS Div Free Loss: tensor(0.0005)	
Iteration: 6400 Total Loss: tensor(3762.3330)			
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.1493)	phi BC Loss: tensor(0.0167)	mu BC Loss: tensor(2.4642)
NS PDE Loss: tensor(3.3106)		NS Div Free Loss: tensor(0.0005)	
Iteration: 6600 Total Loss: tensor(15336.1055)			
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1529)	phi BC Loss: tensor(0.1439)	mu BC Loss: tensor(2.4527)
NS PDE Loss: tensor(14.8996)		NS Div Free Loss: tensor(0.0004)	
Iteration: 6800 Total Loss: tensor(11997.7217)			
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1509)	phi BC Loss: tensor(1.1852e-08)	mu BC Loss: tensor(2.4747)
NS PDE Loss: tensor(11.5585)		NS Div Free Loss: tensor(0.0004)	
Iteration: 7000 Total Loss: tensor(3272.3938)			
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1523)	phi BC Loss: tensor(2.5258e-08)	mu BC Loss: tensor(2.4912)
NS PDE Loss: tensor(2.8386)		NS Div Free Loss: tensor(0.0004)	
Iteration: 7200 Total Loss: tensor(2852.6748)			
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1570)	phi BC Loss: tensor(4.5730e-08)	mu BC Loss: tensor(2.4481)
NS PDE Loss: tensor(2.4295)		NS Div Free Loss: tensor(0.0004)	
Iteration: 7400 Total Loss: tensor(1918.3964)			
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1600)	phi BC Loss: tensor(7.2923e-08)	mu BC Loss: tensor(2.4011)
NS PDE Loss: tensor(1.4994)		NS Div Free Loss: tensor(0.0004)	
Iteration: 7600 Total Loss: tensor(1572.7876)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1614)	phi BC Loss: tensor(1.2750e-07)	mu BC Loss: tensor(2.3654)
NS PDE Loss: tensor(1.1552)		NS Div Free Loss: tensor(0.0004)	
Iteration: 7800 Total Loss: tensor(3793.0417)			
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1581)	phi BC Loss: tensor(1.9487e-07)	mu BC Loss: tensor(2.3969)
NS PDE Loss: tensor(3.3693)		NS Div Free Loss: tensor(0.0005)	
Iteration: 8000 Total Loss: tensor(2563.4189)			
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1609)	phi BC Loss: tensor(3.0596e-07)	mu BC Loss: tensor(2.3964)
NS PDE Loss: tensor(2.1440)		NS Div Free Loss: tensor(0.0005)	
Iteration: 8200 Total Loss: tensor(7635.1992)			
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1597)	phi BC Loss: tensor(4.9903e-07)	mu BC Loss: tensor(2.4216)
NS PDE Loss: tensor(7.2144)		NS Div Free Loss: tensor(0.0005)	
Iteration: 8400 Total Loss: tensor(776.9180)			

IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1581)	phi BC Loss: tensor(9.1361e-07)	mu
BC Loss: tensor(2.4532)	NS PDE Loss: tensor(0.3530)	NS Div Free Loss: tensor(0.0005)	
Iteration: 8600	Total Loss: tensor(10490.8379)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1589)	phi BC Loss: tensor(3.6992e-06)	mu
BC Loss: tensor(2.3972)	NS PDE Loss: tensor(10.0698)	NS Div Free Loss: tensor(0.0005)	
Iteration: 8800	Total Loss: tensor(3697.5151)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1605)	phi BC Loss: tensor(0.0080)	mu BC Loss:
tensor(2.4340)	NS PDE Loss: tensor(3.2744)	NS Div Free Loss: tensor(0.0005)	
Iteration: 9000	Total Loss: tensor(5568.7969)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1648)	phi BC Loss: tensor(8.1466e-06)	mu
BC Loss: tensor(2.3980)	NS PDE Loss: tensor(5.1520)	NS Div Free Loss: tensor(0.0005)	
Iteration: 9200	Total Loss: tensor(6318.4902)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1533)	phi BC Loss: tensor(0.0014)	mu BC Loss:
tensor(2.4566)	NS PDE Loss: tensor(5.8774)	NS Div Free Loss: tensor(0.0006)	
Iteration: 9400	Total Loss: tensor(11311.0654)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1554)	phi BC Loss: tensor(0.0582)	mu BC Loss:
tensor(2.4702)	NS PDE Loss: tensor(10.8783)	NS Div Free Loss: tensor(0.0006)	
Iteration: 9600	Total Loss: tensor(6917.7295)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1595)	phi BC Loss: tensor(0.1877)	mu BC Loss:
tensor(2.4224)	NS PDE Loss: tensor(6.4949)	NS Div Free Loss: tensor(0.0004)	
Iteration: 9800	Total Loss: tensor(2926.0090)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1627)	phi BC Loss: tensor(0.1517)	mu BC Loss:
tensor(2.3765)	NS PDE Loss: tensor(2.5075)	NS Div Free Loss: tensor(0.0004)	
Iteration: 10000	Total Loss: tensor(2943.7295)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1641)	phi BC Loss: tensor(0.1206)	mu BC Loss:
tensor(2.3249)	NS PDE Loss: tensor(2.5264)	NS Div Free Loss: tensor(0.0004)	
Iteration: 10200	Total Loss: tensor(2831.4006)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1638)	phi BC Loss: tensor(0.0916)	mu BC Loss:
tensor(2.2981)	NS PDE Loss: tensor(2.4132)	NS Div Free Loss: tensor(0.0004)	
Iteration: 10400	Total Loss: tensor(999.0192)		
IC Loss: tensor(0.0047)	u BC Loss: tensor(0.1549)	phi BC Loss: tensor(0.9078)	mu BC Loss:
tensor(2.3667)	NS PDE Loss: tensor(0.5257)	NS Div Free Loss: tensor(0.0004)	
Iteration: 10600	Total Loss: tensor(55018.5391)		
IC Loss: tensor(0.0047)	u BC Loss: tensor(0.1428)	phi BC Loss: tensor(0.2437)	mu BC Loss:
tensor(2.4846)	NS PDE Loss: tensor(54.5459)	NS Div Free Loss: tensor(0.0005)	
Iteration: 10800	Total Loss: tensor(5124.1772)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1499)	phi BC Loss: tensor(0.2197)	mu BC Loss:
tensor(2.4389)	NS PDE Loss: tensor(4.6783)	NS Div Free Loss: tensor(0.0004)	
Iteration: 11000	Total Loss: tensor(4310.9624)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1625)	phi BC Loss: tensor(0.1948)	mu BC Loss:
tensor(2.4769)	NS PDE Loss: tensor(3.8885)	NS Div Free Loss: tensor(0.0004)	
Iteration: 11200	Total Loss: tensor(10728.3135)		

IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1590)	phi BC Loss: tensor(0.2258)	mu BC Loss:
tensor(2.5022)	NS PDE Loss: tensor(10.3014)	NS Div Free Loss: tensor(0.0004)	
Iteration: 11400	Total Loss: tensor(11355.7588)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1529)	phi BC Loss: tensor(0.2547)	mu BC Loss:
tensor(2.5297)	NS PDE Loss: tensor(10.9173)	NS Div Free Loss: tensor(0.0004)	
Iteration: 11600	Total Loss: tensor(33100.0430)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.1478)	phi BC Loss: tensor(0.3490)	mu BC Loss:
tensor(2.5448)	NS PDE Loss: tensor(32.6471)	NS Div Free Loss: tensor(0.0004)	
Iteration: 11800	Total Loss: tensor(6691.3569)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1606)	phi BC Loss: tensor(0.3791)	mu BC Loss:
tensor(2.5919)	NS PDE Loss: tensor(6.2685)	NS Div Free Loss: tensor(0.0004)	
Iteration: 12000	Total Loss: tensor(4586.9653)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1586)	phi BC Loss: tensor(0.3922)	mu BC Loss:
tensor(2.5426)	NS PDE Loss: tensor(4.1644)	NS Div Free Loss: tensor(0.0003)	
Iteration: 12200	Total Loss: tensor(3713.7178)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1597)	phi BC Loss: tensor(0.4877)	mu BC Loss:
tensor(2.5366)	NS PDE Loss: tensor(3.2926)	NS Div Free Loss: tensor(0.0003)	
Iteration: 12400	Total Loss: tensor(2818.4976)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1620)	phi BC Loss: tensor(0.6177)	mu BC Loss:
tensor(2.4886)	NS PDE Loss: tensor(2.4002)	NS Div Free Loss: tensor(0.0003)	
Iteration: 12600	Total Loss: tensor(2986.4868)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1621)	phi BC Loss: tensor(0.7484)	mu BC Loss:
tensor(2.4581)	NS PDE Loss: tensor(2.5671)	NS Div Free Loss: tensor(0.0004)	
Iteration: 12800	Total Loss: tensor(3109.5044)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1622)	phi BC Loss: tensor(0.5843)	mu BC Loss:
tensor(2.4234)	NS PDE Loss: tensor(2.6911)	NS Div Free Loss: tensor(0.0004)	
Iteration: 13000	Total Loss: tensor(2440.8105)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1628)	phi BC Loss: tensor(0.4098)	mu BC Loss:
tensor(2.4139)	NS PDE Loss: tensor(2.0223)	NS Div Free Loss: tensor(0.0004)	
Iteration: 13200	Total Loss: tensor(2829.8918)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1497)	phi BC Loss: tensor(0.4991)	mu BC Loss:
tensor(2.4622)	NS PDE Loss: tensor(2.3846)	NS Div Free Loss: tensor(0.0004)	
Iteration: 13400	Total Loss: tensor(9540.6895)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1512)	phi BC Loss: tensor(0.3776)	mu BC Loss:
tensor(2.4944)	NS PDE Loss: tensor(9.1034)	NS Div Free Loss: tensor(0.0004)	
Iteration: 13600	Total Loss: tensor(17873.9277)		
IC Loss: tensor(0.0046)	u BC Loss: tensor(0.1458)	phi BC Loss: tensor(0.4117)	mu BC Loss:
tensor(2.5688)	NS PDE Loss: tensor(17.4143)	NS Div Free Loss: tensor(0.0004)	
Iteration: 13800	Total Loss: tensor(53767.0508)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1617)	phi BC Loss: tensor(0.2051)	mu BC Loss:
tensor(2.5140)	NS PDE Loss: tensor(53.3497)	NS Div Free Loss: tensor(0.0004)	
Iteration: 14000	Total Loss: tensor(7752.0142)		

IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1561)	phi BC Loss: tensor(0.1523)	mu BC Loss:
tensor(2.5378)	NS PDE Loss: tensor(7.3245)	NS Div Free Loss: tensor(0.0004)	
Iteration: 14200	Total Loss: tensor(5285.2715)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1549)	phi BC Loss: tensor(0.0827)	mu BC Loss:
tensor(2.5632)	NS PDE Loss: tensor(4.8554)	NS Div Free Loss: tensor(0.0004)	
Iteration: 14400	Total Loss: tensor(7849.4224)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1539)	phi BC Loss: tensor(0.0541)	mu BC Loss:
tensor(2.6428)	NS PDE Loss: tensor(7.4166)	NS Div Free Loss: tensor(0.0004)	
Iteration: 14600	Total Loss: tensor(1443.1128)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1614)	phi BC Loss: tensor(0.0248)	mu BC Loss:
tensor(2.6157)	NS PDE Loss: tensor(1.0237)	NS Div Free Loss: tensor(0.0004)	
Iteration: 14800	Total Loss: tensor(53764.0039)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1567)	phi BC Loss: tensor(0.0030)	mu BC Loss:
tensor(2.6280)	NS PDE Loss: tensor(53.3304)	NS Div Free Loss: tensor(0.0004)	
Iteration: 15000	Total Loss: tensor(1371.1000)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1596)	phi BC Loss: tensor(0.0076)	mu BC Loss:
tensor(2.6302)	NS PDE Loss: tensor(0.9502)	NS Div Free Loss: tensor(0.0004)	
Iteration: 15200	Total Loss: tensor(7589.6313)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1544)	phi BC Loss: tensor(0.0012)	mu BC Loss:
tensor(2.6720)	NS PDE Loss: tensor(7.1577)	NS Div Free Loss: tensor(0.0004)	
Iteration: 15400	Total Loss: tensor(4593.8145)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1573)	phi BC Loss: tensor(0.0004)	mu BC Loss:
tensor(2.6902)	NS PDE Loss: tensor(4.1682)	NS Div Free Loss: tensor(0.0004)	
Iteration: 15600	Total Loss: tensor(2847.4062)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1606)	phi BC Loss: tensor(0.0003)	mu BC Loss:
tensor(2.6132)	NS PDE Loss: tensor(2.4277)	NS Div Free Loss: tensor(0.0004)	
Iteration: 15800	Total Loss: tensor(4909.3784)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1636)	phi BC Loss: tensor(0.0004)	mu BC Loss:
tensor(2.5436)	NS PDE Loss: tensor(4.4929)	NS Div Free Loss: tensor(0.0004)	
Iteration: 16000	Total Loss: tensor(3372.4983)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1640)	phi BC Loss: tensor(0.0001)	mu BC Loss:
tensor(2.4659)	NS PDE Loss: tensor(2.9570)	NS Div Free Loss: tensor(0.0004)	
Iteration: 16200	Total Loss: tensor(2243.6282)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1637)	phi BC Loss: tensor(1.7338e-05)	mu
BC Loss: tensor(2.4078)	NS PDE Loss: tensor(1.8275)	NS Div Free Loss: tensor(0.0004)	
Iteration: 16400	Total Loss: tensor(5846.3008)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.1555)	phi BC Loss: tensor(0.4565)	mu BC Loss:
tensor(2.4862)	NS PDE Loss: tensor(5.4165)	NS Div Free Loss: tensor(0.0004)	
Iteration: 16600	Total Loss: tensor(3409.7039)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1606)	phi BC Loss: tensor(0.2749)	mu BC Loss:
tensor(2.4722)	NS PDE Loss: tensor(2.9909)	NS Div Free Loss: tensor(0.0003)	
Iteration: 16800	Total Loss: tensor(2479.6638)		

IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1632)	phi BC Loss: tensor(0.0430)	mu BC Loss:
tensor(2.4335)	NS PDE Loss: tensor(2.0635)	NS Div Free Loss: tensor(0.0004)	
Iteration: 17000	Total Loss: tensor(2593.4431)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1634)	phi BC Loss: tensor(0.0267)	mu BC Loss:
tensor(2.4080)	NS PDE Loss: tensor(2.1774)	NS Div Free Loss: tensor(0.0004)	
Iteration: 17200	Total Loss: tensor(7208.4785)		
IC Loss: tensor(0.0047)	u BC Loss: tensor(0.1417)	phi BC Loss: tensor(0.0309)	mu BC Loss:
tensor(2.6489)	NS PDE Loss: tensor(6.7366)	NS Div Free Loss: tensor(0.0006)	
Iteration: 17400	Total Loss: tensor(7291.9688)		
IC Loss: tensor(0.0048)	u BC Loss: tensor(0.1400)	phi BC Loss: tensor(0.0171)	mu BC Loss:
tensor(2.7441)	NS PDE Loss: tensor(6.8120)	NS Div Free Loss: tensor(0.0005)	
Iteration: 17600	Total Loss: tensor(6686.6826)		
IC Loss: tensor(0.0047)	u BC Loss: tensor(0.1405)	phi BC Loss: tensor(0.0042)	mu BC Loss:
tensor(2.8064)	NS PDE Loss: tensor(6.2088)	NS Div Free Loss: tensor(0.0004)	
Iteration: 17800	Total Loss: tensor(6089.0161)		
IC Loss: tensor(0.0047)	u BC Loss: tensor(0.1411)	phi BC Loss: tensor(0.0013)	mu BC Loss:
tensor(2.8442)	NS PDE Loss: tensor(5.6141)	NS Div Free Loss: tensor(0.0004)	
Iteration: 18000	Total Loss: tensor(3441.8545)		
IC Loss: tensor(0.0047)	u BC Loss: tensor(0.1417)	phi BC Loss: tensor(0.0009)	mu BC Loss:
tensor(2.7945)	NS PDE Loss: tensor(2.9690)	NS Div Free Loss: tensor(0.0002)	
Iteration: 18200	Total Loss: tensor(23770.0547)		
IC Loss: tensor(0.0047)	u BC Loss: tensor(0.1419)	phi BC Loss: tensor(0.0007)	mu BC Loss:
tensor(2.9272)	NS PDE Loss: tensor(23.3006)	NS Div Free Loss: tensor(0.0002)	
Iteration: 18400	Total Loss: tensor(6495.8896)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1487)	phi BC Loss: tensor(2.6222e-05)	mu
BC Loss: tensor(2.8833)	NS PDE Loss: tensor(6.0513)	NS Div Free Loss: tensor(0.0002)	
Iteration: 18600	Total Loss: tensor(32526.6602)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.1610)	phi BC Loss: tensor(0.0018)	mu BC Loss:
tensor(2.6942)	NS PDE Loss: tensor(32.1127)	NS Div Free Loss: tensor(0.0002)	
Iteration: 18800	Total Loss: tensor(2437.2346)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.1481)	phi BC Loss: tensor(0.0222)	mu BC Loss:
tensor(2.8497)	NS PDE Loss: tensor(1.9901)	NS Div Free Loss: tensor(0.0002)	
Iteration: 19000	Total Loss: tensor(1200.1167)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1596)	phi BC Loss: tensor(0.0112)	mu BC Loss:
tensor(2.7918)	NS PDE Loss: tensor(0.7798)	NS Div Free Loss: tensor(0.0003)	
Iteration: 19200	Total Loss: tensor(7105.0337)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.1477)	phi BC Loss: tensor(0.0079)	mu BC Loss:
tensor(2.8172)	NS PDE Loss: tensor(6.6550)	NS Div Free Loss: tensor(0.0003)	
Iteration: 19400	Total Loss: tensor(4804.4717)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.1540)	phi BC Loss: tensor(0.0044)	mu BC Loss:
tensor(2.6704)	NS PDE Loss: tensor(4.3770)	NS Div Free Loss: tensor(0.0003)	
Iteration: 19600	Total Loss: tensor(2501.6858)		

IC Loss: tensor(0.0041) u BC Loss: tensor(0.1623) phi BC Loss: tensor(0.0025) mu BC Loss: tensor(2.6255)
 NS PDE Loss: tensor(2.0862) NS Div Free Loss: tensor(0.0003)
 Iteration: 19800 Total Loss: tensor(9105.1279)
 IC Loss: tensor(0.0042) u BC Loss: tensor(0.1611) phi BC Loss: tensor(0.0014) mu BC Loss: tensor(2.5895)
 NS PDE Loss: tensor(8.6869) NS Div Free Loss: tensor(0.0004)
 Iteration: 20000 Total Loss: tensor(20480.2676)
 IC Loss: tensor(0.0042) u BC Loss: tensor(0.1598) phi BC Loss: tensor(0.0009) mu BC Loss: tensor(2.6074)
 NS PDE Loss: tensor(20.0598) NS Div Free Loss: tensor(0.0004)
 Current Final Time: 0.4 Current Learning Rate: 0.005
 Iteration: 200 Total Loss: tensor(2785.5869)
 IC Loss: tensor(0.0045) u BC Loss: tensor(0.2446) phi BC Loss: tensor(2.1883e-08) mu BC Loss: tensor(3.2153)
 NS PDE Loss: tensor(2.3325) NS Div Free Loss: tensor(0.0004)
 Iteration: 400 Total Loss: tensor(11222.2021)
 IC Loss: tensor(0.0047) u BC Loss: tensor(0.2408) phi BC Loss: tensor(2.8375e-08) mu BC Loss: tensor(3.3620)
 NS PDE Loss: tensor(10.7514) NS Div Free Loss: tensor(0.0007)
 Iteration: 600 Total Loss: tensor(7381.4136)
 IC Loss: tensor(0.0047) u BC Loss: tensor(0.2414) phi BC Loss: tensor(3.7494e-08) mu BC Loss: tensor(3.4424)
 NS PDE Loss: tensor(6.9096) NS Div Free Loss: tensor(0.0009)
 Iteration: 800 Total Loss: tensor(11473.0371)
 IC Loss: tensor(0.0045) u BC Loss: tensor(0.2457) phi BC Loss: tensor(5.5390e-08) mu BC Loss: tensor(3.4898)
 NS PDE Loss: tensor(11.0171) NS Div Free Loss: tensor(0.0010)
 Iteration: 1000 Total Loss: tensor(4615.3257)
 IC Loss: tensor(0.0043) u BC Loss: tensor(0.2552) phi BC Loss: tensor(1.1225e-07) mu BC Loss: tensor(3.5702)
 NS PDE Loss: tensor(4.1797) NS Div Free Loss: tensor(0.0010)
 Iteration: 1200 Total Loss: tensor(3698.2903)
 IC Loss: tensor(0.0043) u BC Loss: tensor(0.2558) phi BC Loss: tensor(3.4931e-07) mu BC Loss: tensor(3.6611)
 NS PDE Loss: tensor(3.2633) NS Div Free Loss: tensor(0.0011)
 Iteration: 1400 Total Loss: tensor(3424.5759)
 IC Loss: tensor(0.0043) u BC Loss: tensor(0.2619) phi BC Loss: tensor(1.1797e-07) mu BC Loss: tensor(3.7471)
 NS PDE Loss: tensor(2.9902) NS Div Free Loss: tensor(0.0011)
 Iteration: 1600 Total Loss: tensor(3090.9985)
 IC Loss: tensor(0.0042) u BC Loss: tensor(0.2671) phi BC Loss: tensor(0.0463) mu BC Loss: tensor(3.7389)
 NS PDE Loss: tensor(2.6670) NS Div Free Loss: tensor(0.0012)
 Iteration: 1800 Total Loss: tensor(2858.6951)
 IC Loss: tensor(0.0044) u BC Loss: tensor(0.2649) phi BC Loss: tensor(3.6195e-08) mu BC Loss: tensor(3.7532)
 NS PDE Loss: tensor(2.4143) NS Div Free Loss: tensor(0.0013)
 Iteration: 2000 Total Loss: tensor(2382.8101)
 IC Loss: tensor(0.0042) u BC Loss: tensor(0.2660) phi BC Loss: tensor(0.0073) mu BC Loss: tensor(3.7956)
 NS PDE Loss: tensor(1.9564) NS Div Free Loss: tensor(0.0013)
 Iteration: 2200 Total Loss: tensor(3853.8555)
 IC Loss: tensor(0.0053) u BC Loss: tensor(0.2258) phi BC Loss: tensor(0.0024) mu BC Loss: tensor(3.8994)
 NS PDE Loss: tensor(3.3161) NS Div Free Loss: tensor(0.0014)

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Iteration: 2400      Total Loss: tensor(5757.3525)
IC Loss:  tensor(0.0056)      u BC Loss:  tensor(0.2201)      phi BC Loss:  tensor(0.0012)      mu BC Loss:
tensor(4.0421) NS PDE Loss:  tensor(5.1926)      NS Div Free Loss:  tensor(0.0012)
Iteration: 2600      Total Loss: tensor(5581.0508)
IC Loss:  tensor(0.0056)      u BC Loss:  tensor(0.2200)      phi BC Loss:  tensor(0.0028)      mu BC Loss:
tensor(4.1438) NS PDE Loss:  tensor(5.0194)      NS Div Free Loss:  tensor(0.0011)
Iteration: 2800      Total Loss: tensor(5178.5601)
IC Loss:  tensor(0.0055)      u BC Loss:  tensor(0.2210)      phi BC Loss:  tensor(0.0105)      mu BC Loss:
tensor(4.2251) NS PDE Loss:  tensor(4.6253)      NS Div Free Loss:  tensor(0.0011)
Iteration: 3000      Total Loss: tensor(10777.7354)
IC Loss:  tensor(0.0045)      u BC Loss:  tensor(0.2474)      phi BC Loss:  tensor(5.8773e-05)      mu
BC Loss:  tensor(4.3142)      NS PDE Loss:  tensor(10.3195)      NS Div Free Loss:  tensor(0.0014)
Iteration: 3200      Total Loss: tensor(7195.7305)
IC Loss:  tensor(0.0044)      u BC Loss:  tensor(0.2499)      phi BC Loss:  tensor(2.9438e-07)      mu
BC Loss:  tensor(4.1158)      NS PDE Loss:  tensor(6.7511)      NS Div Free Loss:  tensor(0.0010)
Iteration: 3400      Total Loss: tensor(5883.7886)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2591)      phi BC Loss:  tensor(5.3002e-07)      mu
BC Loss:  tensor(4.1357)      NS PDE Loss:  tensor(5.4540)      NS Div Free Loss:  tensor(0.0011)
Iteration: 3600      Total Loss: tensor(2814.7690)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2630)      phi BC Loss:  tensor(1.1112e-06)      mu
BC Loss:  tensor(4.1532)      NS PDE Loss:  tensor(2.3887)      NS Div Free Loss:  tensor(0.0011)
Iteration: 3800      Total Loss: tensor(2804.6409)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2636)      phi BC Loss:  tensor(3.5306e-06)      mu
BC Loss:  tensor(4.1766)      NS PDE Loss:  tensor(2.3793)      NS Div Free Loss:  tensor(0.0012)
Iteration: 4000      Total Loss: tensor(3381.8865)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2652)      phi BC Loss:  tensor(3.7988e-05)      mu
BC Loss:  tensor(4.2021)      NS PDE Loss:  tensor(2.9576)      NS Div Free Loss:  tensor(0.0012)
Iteration: 4200      Total Loss: tensor(2971.2244)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2653)      phi BC Loss:  tensor(0.3801)      mu BC Loss:
tensor(4.2155) NS PDE Loss:  tensor(2.5444)      NS Div Free Loss:  tensor(0.0013)
Iteration: 4400      Total Loss: tensor(3090.4570)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2654)      phi BC Loss:  tensor(2.7078)      mu BC Loss:
tensor(4.2298) NS PDE Loss:  tensor(2.6615)      NS Div Free Loss:  tensor(0.0013)
Iteration: 4600      Total Loss: tensor(3133.3091)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2657)      phi BC Loss:  tensor(0.3585)      mu BC Loss:
tensor(4.2234) NS PDE Loss:  tensor(2.7070)      NS Div Free Loss:  tensor(0.0014)
Iteration: 4800      Total Loss: tensor(2899.0222)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2657)      phi BC Loss:  tensor(0.3422)      mu BC Loss:
tensor(4.2150) NS PDE Loss:  tensor(2.4715)      NS Div Free Loss:  tensor(0.0014)
Iteration: 5000      Total Loss: tensor(3456.1179)
IC Loss:  tensor(0.0042)      u BC Loss:  tensor(0.2655)      phi BC Loss:  tensor(0.2156)      mu BC Loss:
tensor(4.2012) NS PDE Loss:  tensor(3.0291)      NS Div Free Loss:  tensor(0.0014)

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Iteration: 5200	Total Loss: tensor(3343.6187)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2647)	phi BC Loss: tensor(0.1156)	mu BC Loss: tensor(4.1701)
NS PDE Loss: tensor(2.9168)	NS Div Free Loss: tensor(0.0014)		
Iteration: 5400	Total Loss: tensor(4683.2935)		
IC Loss: tensor(0.0060)	u BC Loss: tensor(0.2429)	phi BC Loss: tensor(7.8027e-13)	mu BC Loss: tensor(4.1764)
BC Loss: tensor(4.1764)	NS PDE Loss: tensor(4.0787)	NS Div Free Loss: tensor(0.0016)	
Iteration: 5600	Total Loss: tensor(20871.1465)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.2485)	phi BC Loss: tensor(2.4103e-07)	mu BC Loss: tensor(4.2420)
BC Loss: tensor(4.2420)	NS PDE Loss: tensor(20.4135)	NS Div Free Loss: tensor(0.0014)	
Iteration: 5800	Total Loss: tensor(5605.1929)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.2462)	phi BC Loss: tensor(1.1956e-06)	mu BC Loss: tensor(4.2973)
BC Loss: tensor(4.2973)	NS PDE Loss: tensor(5.1491)	NS Div Free Loss: tensor(0.0012)	
Iteration: 6000	Total Loss: tensor(8029.9141)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2621)	phi BC Loss: tensor(4.2549e-06)	mu BC Loss: tensor(4.3380)
BC Loss: tensor(4.3380)	NS PDE Loss: tensor(7.5998)	NS Div Free Loss: tensor(0.0013)	
Iteration: 6200	Total Loss: tensor(6795.2227)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2594)	phi BC Loss: tensor(9.1831e-06)	mu BC Loss: tensor(4.3862)
BC Loss: tensor(4.3862)	NS PDE Loss: tensor(6.3613)	NS Div Free Loss: tensor(0.0015)	
Iteration: 6400	Total Loss: tensor(2931.7737)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2643)	phi BC Loss: tensor(1.8548e-05)	mu BC Loss: tensor(4.3806)
BC Loss: tensor(4.3806)	NS PDE Loss: tensor(2.5031)	NS Div Free Loss: tensor(0.0015)	
Iteration: 6600	Total Loss: tensor(3252.0403)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2651)	phi BC Loss: tensor(3.1146e-05)	mu BC Loss: tensor(4.3757)
BC Loss: tensor(4.3757)	NS PDE Loss: tensor(2.8262)	NS Div Free Loss: tensor(0.0013)	
Iteration: 6800	Total Loss: tensor(3441.4824)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2657)	phi BC Loss: tensor(4.6280e-05)	mu BC Loss: tensor(4.3828)
BC Loss: tensor(4.3828)	NS PDE Loss: tensor(3.0161)	NS Div Free Loss: tensor(0.0013)	
Iteration: 7000	Total Loss: tensor(2435.7739)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2663)	phi BC Loss: tensor(6.4712e-05)	mu BC Loss: tensor(4.3892)
BC Loss: tensor(4.3892)	NS PDE Loss: tensor(2.0086)	NS Div Free Loss: tensor(0.0014)	
Iteration: 7200	Total Loss: tensor(1318.5889)		
IC Loss: tensor(0.0050)	u BC Loss: tensor(0.2356)	phi BC Loss: tensor(8.7622e-05)	mu BC Loss: tensor(4.5475)
BC Loss: tensor(4.5475)	NS PDE Loss: tensor(0.8109)	NS Div Free Loss: tensor(0.0019)	
Iteration: 7400	Total Loss: tensor(3538.4626)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2672)	phi BC Loss: tensor(0.0002)	mu BC Loss: tensor(4.4206)
NS PDE Loss: tensor(3.1079)	NS Div Free Loss: tensor(0.0017)		
Iteration: 7600	Total Loss: tensor(4255.7964)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2615)	phi BC Loss: tensor(0.0004)	mu BC Loss: tensor(4.4519)
NS PDE Loss: tensor(3.8202)	NS Div Free Loss: tensor(0.0016)		
Iteration: 7800	Total Loss: tensor(3071.0671)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2653)	phi BC Loss: tensor(0.0016)	mu BC Loss: tensor(4.4532)
NS PDE Loss: tensor(2.6430)	NS Div Free Loss: tensor(0.0014)		

Iteration: 8000	Total Loss: tensor(4767.7354)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2678)	phi BC Loss: tensor(1.6834e-05)	mu
BC Loss: tensor(4.4551)	NS PDE Loss: tensor(4.3403)	NS Div Free Loss: tensor(0.0013)	
Iteration: 8200	Total Loss: tensor(3619.5508)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2684)	phi BC Loss: tensor(0.1283)	mu BC Loss:
tensor(4.4296)	NS PDE Loss: tensor(3.1969)	NS Div Free Loss: tensor(0.0013)	
Iteration: 8400	Total Loss: tensor(2737.0645)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2694)	phi BC Loss: tensor(0.0085)	mu BC Loss:
tensor(4.4745)	NS PDE Loss: tensor(2.3157)	NS Div Free Loss: tensor(0.0013)	
Iteration: 8600	Total Loss: tensor(2498.4329)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.2699)	phi BC Loss: tensor(0.0054)	mu BC Loss:
tensor(4.5182)	NS PDE Loss: tensor(2.0784)	NS Div Free Loss: tensor(0.0012)	
Iteration: 8800	Total Loss: tensor(31688.4355)		
IC Loss: tensor(0.0050)	u BC Loss: tensor(0.2352)	phi BC Loss: tensor(7.2648e-12)	mu
BC Loss: tensor(4.5164)	NS PDE Loss: tensor(31.1854)	NS Div Free Loss: tensor(0.0015)	
Iteration: 9000	Total Loss: tensor(39331.1797)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2577)	phi BC Loss: tensor(1.7894e-11)	mu
BC Loss: tensor(4.5246)	NS PDE Loss: tensor(38.8937)	NS Div Free Loss: tensor(0.0015)	
Iteration: 9200	Total Loss: tensor(3373.7979)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.2511)	phi BC Loss: tensor(1.8086e-11)	mu
BC Loss: tensor(4.5004)	NS PDE Loss: tensor(2.9296)	NS Div Free Loss: tensor(0.0012)	
Iteration: 9400	Total Loss: tensor(15081.1377)		
IC Loss: tensor(0.0046)	u BC Loss: tensor(0.2421)	phi BC Loss: tensor(1.3481e-11)	mu
BC Loss: tensor(4.5287)	NS PDE Loss: tensor(14.6117)	NS Div Free Loss: tensor(0.0012)	
Iteration: 9600	Total Loss: tensor(7187.4707)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.2504)	phi BC Loss: tensor(1.0042e-11)	mu
BC Loss: tensor(4.5952)	NS PDE Loss: tensor(6.7409)	NS Div Free Loss: tensor(0.0012)	
Iteration: 9800	Total Loss: tensor(10358.9170)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2618)	phi BC Loss: tensor(9.7947e-11)	mu
BC Loss: tensor(4.6009)	NS PDE Loss: tensor(9.9296)	NS Div Free Loss: tensor(0.0014)	
Iteration: 10000	Total Loss: tensor(3983.2500)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2620)	phi BC Loss: tensor(6.1784e-10)	mu
BC Loss: tensor(4.6074)	NS PDE Loss: tensor(3.5524)	NS Div Free Loss: tensor(0.0014)	
Iteration: 10200	Total Loss: tensor(6168.1777)		
IC Loss: tensor(0.0054)	u BC Loss: tensor(0.2239)	phi BC Loss: tensor(7.1438e-10)	mu
BC Loss: tensor(4.7368)	NS PDE Loss: tensor(5.6255)	NS Div Free Loss: tensor(0.0012)	
Iteration: 10400	Total Loss: tensor(6617.3638)		
IC Loss: tensor(0.0055)	u BC Loss: tensor(0.2207)	phi BC Loss: tensor(1.0409e-09)	mu
BC Loss: tensor(4.8190)	NS PDE Loss: tensor(6.0619)	NS Div Free Loss: tensor(0.0011)	
Iteration: 10600	Total Loss: tensor(6338.3887)		
IC Loss: tensor(0.0054)	u BC Loss: tensor(0.2209)	phi BC Loss: tensor(1.9399e-09)	mu
BC Loss: tensor(4.8792)	NS PDE Loss: tensor(5.7876)	NS Div Free Loss: tensor(0.0011)	

Iteration: 10800	Total Loss: tensor(5669.8052)		
IC Loss: tensor(0.0054)	u BC Loss: tensor(0.2217)	phi BC Loss: tensor(2.9324e-09)	mu
BC Loss: tensor(4.9250)	NS PDE Loss: tensor(5.1256)	NS Div Free Loss: tensor(0.0010)	
Iteration: 11000	Total Loss: tensor(31228.0195)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.2220)	phi BC Loss: tensor(3.8902e-09)	mu
BC Loss: tensor(4.9362)	NS PDE Loss: tensor(30.6919)	NS Div Free Loss: tensor(0.0009)	
Iteration: 11200	Total Loss: tensor(9627.0576)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2514)	phi BC Loss: tensor(3.9659e-09)	mu
BC Loss: tensor(4.9370)	NS PDE Loss: tensor(9.1867)	NS Div Free Loss: tensor(0.0011)	
Iteration: 11400	Total Loss: tensor(5857.4316)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2611)	phi BC Loss: tensor(6.5103e-09)	mu
BC Loss: tensor(4.8947)	NS PDE Loss: tensor(5.4307)	NS Div Free Loss: tensor(0.0011)	
Iteration: 11600	Total Loss: tensor(3847.0176)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2646)	phi BC Loss: tensor(1.2662e-08)	mu
BC Loss: tensor(4.8099)	NS PDE Loss: tensor(3.4238)	NS Div Free Loss: tensor(0.0011)	
Iteration: 11800	Total Loss: tensor(3032.8887)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2642)	phi BC Loss: tensor(2.6590e-08)	mu
BC Loss: tensor(4.7334)	NS PDE Loss: tensor(2.6107)	NS Div Free Loss: tensor(0.0011)	
Iteration: 12000	Total Loss: tensor(2198.8967)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2661)	phi BC Loss: tensor(3.7921e-08)	mu
BC Loss: tensor(4.6957)	NS PDE Loss: tensor(1.7774)	NS Div Free Loss: tensor(0.0011)	
Iteration: 12200	Total Loss: tensor(4683.5049)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2531)	phi BC Loss: tensor(6.0015e-08)	mu
BC Loss: tensor(4.6910)	NS PDE Loss: tensor(4.2439)	NS Div Free Loss: tensor(0.0013)	
Iteration: 12400	Total Loss: tensor(3189.1570)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.2464)	phi BC Loss: tensor(9.0060e-08)	mu
BC Loss: tensor(4.7384)	NS PDE Loss: tensor(2.7364)	NS Div Free Loss: tensor(0.0011)	
Iteration: 12600	Total Loss: tensor(16724.7207)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.2497)	phi BC Loss: tensor(1.2653e-07)	mu
BC Loss: tensor(4.7963)	NS PDE Loss: tensor(16.2776)	NS Div Free Loss: tensor(0.0011)	
Iteration: 12800	Total Loss: tensor(1256.2939)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2519)	phi BC Loss: tensor(1.6652e-07)	mu
BC Loss: tensor(4.7938)	NS PDE Loss: tensor(0.8178)	NS Div Free Loss: tensor(0.0010)	
Iteration: 13000	Total Loss: tensor(7543.3989)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2605)	phi BC Loss: tensor(2.2409e-07)	mu
BC Loss: tensor(4.8054)	NS PDE Loss: tensor(7.1169)	NS Div Free Loss: tensor(0.0011)	
Iteration: 13200	Total Loss: tensor(4434.5430)		
IC Loss: tensor(0.0046)	u BC Loss: tensor(0.2422)	phi BC Loss: tensor(3.2361e-07)	mu
BC Loss: tensor(4.7209)	NS PDE Loss: tensor(3.9732)	NS Div Free Loss: tensor(0.0011)	
Iteration: 13400	Total Loss: tensor(3157.3459)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.2474)	phi BC Loss: tensor(4.4838e-07)	mu
BC Loss: tensor(4.7831)	NS PDE Loss: tensor(2.7064)	NS Div Free Loss: tensor(0.0011)	

Iteration: 13600	Total Loss: tensor(7031.9170)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2516)	phi BC Loss: tensor(6.5391e-07)	mu
BC Loss: tensor(4.8098)	NS PDE Loss: tensor(6.5930)	NS Div Free Loss: tensor(0.0011)	
Iteration: 13800	Total Loss: tensor(25998.0449)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2614)	phi BC Loss: tensor(9.6782e-07)	mu
BC Loss: tensor(4.7934)	NS PDE Loss: tensor(25.5759)	NS Div Free Loss: tensor(0.0011)	
Iteration: 14000	Total Loss: tensor(19558.6152)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2537)	phi BC Loss: tensor(1.5325e-06)	mu
BC Loss: tensor(4.7374)	NS PDE Loss: tensor(19.1200)	NS Div Free Loss: tensor(0.0012)	
Iteration: 14200	Total Loss: tensor(6061.9194)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2621)	phi BC Loss: tensor(2.0764e-06)	mu
BC Loss: tensor(4.7208)	NS PDE Loss: tensor(5.6370)	NS Div Free Loss: tensor(0.0011)	
Iteration: 14400	Total Loss: tensor(4569.5435)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2515)	phi BC Loss: tensor(3.5996e-06)	mu
BC Loss: tensor(4.7503)	NS PDE Loss: tensor(4.1310)	NS Div Free Loss: tensor(0.0010)	
Iteration: 14600	Total Loss: tensor(31221.8574)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.2466)	phi BC Loss: tensor(8.0185e-06)	mu
BC Loss: tensor(4.7527)	NS PDE Loss: tensor(30.7739)	NS Div Free Loss: tensor(0.0010)	
Iteration: 14800	Total Loss: tensor(9694.2324)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2517)	phi BC Loss: tensor(1.8070e-05)	mu
BC Loss: tensor(4.7654)	NS PDE Loss: tensor(9.2552)	NS Div Free Loss: tensor(0.0010)	
Iteration: 15000	Total Loss: tensor(5767.3184)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.2439)	phi BC Loss: tensor(2.4771e-05)	mu
BC Loss: tensor(4.7926)	NS PDE Loss: tensor(5.3085)	NS Div Free Loss: tensor(0.0010)	
Iteration: 15200	Total Loss: tensor(5631.8130)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2540)	phi BC Loss: tensor(2.9065e-05)	mu
BC Loss: tensor(4.7706)	NS PDE Loss: tensor(5.2007)	NS Div Free Loss: tensor(0.0010)	
Iteration: 15400	Total Loss: tensor(2099.7517)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2535)	phi BC Loss: tensor(1.6416e-05)	mu
BC Loss: tensor(4.7267)	NS PDE Loss: tensor(1.6659)	NS Div Free Loss: tensor(0.0010)	
Iteration: 15600	Total Loss: tensor(24057.9297)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2552)	phi BC Loss: tensor(8.5112e-06)	mu
BC Loss: tensor(4.7447)	NS PDE Loss: tensor(23.6274)	NS Div Free Loss: tensor(0.0010)	
Iteration: 15800	Total Loss: tensor(17706.5664)		
IC Loss: tensor(0.0051)	u BC Loss: tensor(0.2547)	phi BC Loss: tensor(6.1815e-07)	mu
BC Loss: tensor(4.6925)	NS PDE Loss: tensor(17.1900)	NS Div Free Loss: tensor(0.0010)	
Iteration: 16000	Total Loss: tensor(2466.7126)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.2641)	phi BC Loss: tensor(0.0015)	mu BC Loss:
tensor(4.6286)	NS PDE Loss: tensor(2.0479)	NS Div Free Loss: tensor(0.0010)	
Iteration: 16200	Total Loss: tensor(8204.5947)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.2218)	phi BC Loss: tensor(0.0014)	mu BC Loss:
tensor(4.8653)	NS PDE Loss: tensor(7.6639)	NS Div Free Loss: tensor(0.0009)	

Iteration: 16400	Total Loss: tensor(8423.7998)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.2225)	phi BC Loss: tensor(9.7432e-05)	mu
BC Loss: tensor(5.0099)	NS PDE Loss: tensor(7.8897)	NS Div Free Loss: tensor(0.0008)	
Iteration: 16600	Total Loss: tensor(7258.5444)		
IC Loss: tensor(0.0052)	u BC Loss: tensor(0.2232)	phi BC Loss: tensor(5.8363e-06)	mu
BC Loss: tensor(5.1031)	NS PDE Loss: tensor(6.7295)	NS Div Free Loss: tensor(0.0007)	
Iteration: 16800	Total Loss: tensor(1614.7252)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.2413)	phi BC Loss: tensor(1.5071e-06)	mu
BC Loss: tensor(5.1709)	NS PDE Loss: tensor(1.1565)	NS Div Free Loss: tensor(0.0007)	
Iteration: 17000	Total Loss: tensor(14894.5820)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2519)	phi BC Loss: tensor(1.0525e-07)	mu
BC Loss: tensor(4.9692)	NS PDE Loss: tensor(14.4598)	NS Div Free Loss: tensor(0.0008)	
Iteration: 17200	Total Loss: tensor(9359.3730)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2519)	phi BC Loss: tensor(5.9735e-07)	mu
BC Loss: tensor(4.9735)	NS PDE Loss: tensor(8.9252)	NS Div Free Loss: tensor(0.0008)	
Iteration: 17400	Total Loss: tensor(42708.6484)		
IC Loss: tensor(0.0053)	u BC Loss: tensor(0.2231)	phi BC Loss: tensor(3.3168e-08)	mu
BC Loss: tensor(4.6849)	NS PDE Loss: tensor(42.1777)	NS Div Free Loss: tensor(0.0007)	
Iteration: 17600	Total Loss: tensor(48233.4844)		
IC Loss: tensor(0.0073)	u BC Loss: tensor(0.1935)	phi BC Loss: tensor(2.1566e-07)	mu
BC Loss: tensor(4.9426)	NS PDE Loss: tensor(47.5026)	NS Div Free Loss: tensor(0.0006)	
Iteration: 17800	Total Loss: tensor(50759.5312)		
IC Loss: tensor(0.0073)	u BC Loss: tensor(0.1932)	phi BC Loss: tensor(4.6179e-05)	mu
BC Loss: tensor(5.1469)	NS PDE Loss: tensor(50.0286)	NS Div Free Loss: tensor(0.0005)	
Iteration: 18000	Total Loss: tensor(3555.3159)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2552)	phi BC Loss: tensor(9.1808e-05)	mu
BC Loss: tensor(5.1310)	NS PDE Loss: tensor(3.1252)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18200	Total Loss: tensor(5480.3096)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2572)	phi BC Loss: tensor(8.5879e-08)	mu
BC Loss: tensor(4.9522)	NS PDE Loss: tensor(5.0562)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18400	Total Loss: tensor(3418.3311)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.2539)	phi BC Loss: tensor(2.8283e-05)	mu
BC Loss: tensor(4.8769)	NS PDE Loss: tensor(2.9863)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18600	Total Loss: tensor(8009.2446)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2600)	phi BC Loss: tensor(1.6989e-06)	mu
BC Loss: tensor(4.8016)	NS PDE Loss: tensor(7.5868)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18800	Total Loss: tensor(2990.2166)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.2485)	phi BC Loss: tensor(0.0001)	mu BC Loss:
tensor(4.8736)	NS PDE Loss: tensor(2.5460)	NS Div Free Loss: tensor(0.0007)	
Iteration: 19000	Total Loss: tensor(8752.4082)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2632)	phi BC Loss: tensor(7.4699e-10)	mu
BC Loss: tensor(4.5831)	NS PDE Loss: tensor(8.3237)	NS Div Free Loss: tensor(0.0010)	

Iteration: 19200	Total Loss: tensor(32270.0156)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.2663)	phi BC Loss: tensor(1.6363e-07)	mu
BC Loss: tensor(4.6159)	NS PDE Loss: tensor(31.8527)	NS Div Free Loss: tensor(0.0008)	
Iteration: 19400	Total Loss: tensor(43478.9414)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2598)	phi BC Loss: tensor(3.0699e-07)	mu
BC Loss: tensor(4.5779)	NS PDE Loss: tensor(43.0561)	NS Div Free Loss: tensor(0.0008)	
Iteration: 19600	Total Loss: tensor(11505.5029)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.2464)	phi BC Loss: tensor(6.4679e-08)	mu
BC Loss: tensor(4.5757)	NS PDE Loss: tensor(11.0581)	NS Div Free Loss: tensor(0.0007)	
Iteration: 19800	Total Loss: tensor(5415.9829)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2583)	phi BC Loss: tensor(1.2423e-07)	mu
BC Loss: tensor(4.6047)	NS PDE Loss: tensor(4.9875)	NS Div Free Loss: tensor(0.0007)	
Iteration: 20000	Total Loss: tensor(4228.4136)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.2648)	phi BC Loss: tensor(3.4892e-07)	mu
BC Loss: tensor(4.6075)	NS PDE Loss: tensor(3.8061)	NS Div Free Loss: tensor(0.0008)	
Current Final Time: 0.5 Current Learning Rate: 0.005			
Iteration: 200	Total Loss: tensor(1817.4048)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4659)	phi BC Loss: tensor(4.6849e-11)	mu
BC Loss: tensor(6.7269)	NS PDE Loss: tensor(1.3906)	NS Div Free Loss: tensor(0.0005)	
Iteration: 400	Total Loss: tensor(2646.5493)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4705)	phi BC Loss: tensor(3.8378e-11)	mu
BC Loss: tensor(6.6291)	NS PDE Loss: tensor(2.2236)	NS Div Free Loss: tensor(0.0007)	
Iteration: 600	Total Loss: tensor(1945.0432)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.4546)	phi BC Loss: tensor(1.4954e-11)	mu
BC Loss: tensor(6.7581)	NS PDE Loss: tensor(1.5035)	NS Div Free Loss: tensor(0.0008)	
Iteration: 800	Total Loss: tensor(4277.4111)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.4486)	phi BC Loss: tensor(1.6833e-11)	mu
BC Loss: tensor(6.7640)	NS PDE Loss: tensor(3.8242)	NS Div Free Loss: tensor(0.0009)	
Iteration: 1000	Total Loss: tensor(18217.1465)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.4538)	phi BC Loss: tensor(1.3881e-11)	mu
BC Loss: tensor(6.8314)	NS PDE Loss: tensor(17.7728)	NS Div Free Loss: tensor(0.0009)	
Iteration: 1200	Total Loss: tensor(4334.7744)		
IC Loss: tensor(0.0046)	u BC Loss: tensor(0.4424)	phi BC Loss: tensor(1.0982e-11)	mu
BC Loss: tensor(6.7185)	NS PDE Loss: tensor(3.8662)	NS Div Free Loss: tensor(0.0010)	
Iteration: 1400	Total Loss: tensor(2604.1519)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.4539)	phi BC Loss: tensor(1.2178e-11)	mu
BC Loss: tensor(6.7654)	NS PDE Loss: tensor(2.1595)	NS Div Free Loss: tensor(0.0010)	
Iteration: 1600	Total Loss: tensor(17006.1367)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.4530)	phi BC Loss: tensor(1.3240e-11)	mu
BC Loss: tensor(6.7634)	NS PDE Loss: tensor(16.5639)	NS Div Free Loss: tensor(0.0010)	
Iteration: 1800	Total Loss: tensor(4469.8940)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4661)	phi BC Loss: tensor(1.4099e-11)	mu

BC Loss: tensor(6.7587)	NS PDE Loss: tensor(4.0382)	NS Div Free Loss: tensor(0.0011)	
Iteration: 2000	Total Loss: tensor(3582.7808)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4703)	phi BC Loss: tensor(1.4475e-11)	mu
BC Loss: tensor(6.6904)	NS PDE Loss: tensor(3.1563)	NS Div Free Loss: tensor(0.0011)	
Iteration: 2200	Total Loss: tensor(2815.9490)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4705)	phi BC Loss: tensor(1.4389e-11)	mu
BC Loss: tensor(6.6233)	NS PDE Loss: tensor(2.3902)	NS Div Free Loss: tensor(0.0010)	
Iteration: 2400	Total Loss: tensor(2742.1333)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4704)	phi BC Loss: tensor(1.3905e-11)	mu
BC Loss: tensor(6.5733)	NS PDE Loss: tensor(2.3165)	NS Div Free Loss: tensor(0.0010)	
Iteration: 2600	Total Loss: tensor(2712.7876)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4703)	phi BC Loss: tensor(8.6165e-12)	mu
BC Loss: tensor(6.5309)	NS PDE Loss: tensor(2.2871)	NS Div Free Loss: tensor(0.0010)	
Iteration: 2800	Total Loss: tensor(2704.3147)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4702)	phi BC Loss: tensor(8.0158e-12)	mu
BC Loss: tensor(6.4941)	NS PDE Loss: tensor(2.2786)	NS Div Free Loss: tensor(0.0010)	
Iteration: 3000	Total Loss: tensor(3166.7778)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4702)	phi BC Loss: tensor(7.3741e-12)	mu
BC Loss: tensor(6.4619)	NS PDE Loss: tensor(2.7409)	NS Div Free Loss: tensor(0.0011)	
Iteration: 3200	Total Loss: tensor(2716.9653)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4700)	phi BC Loss: tensor(6.7291e-12)	mu
BC Loss: tensor(6.4312)	NS PDE Loss: tensor(2.2911)	NS Div Free Loss: tensor(0.0011)	
Iteration: 3400	Total Loss: tensor(2730.7717)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4700)	phi BC Loss: tensor(6.1242e-12)	mu
BC Loss: tensor(6.4036)	NS PDE Loss: tensor(2.3049)	NS Div Free Loss: tensor(0.0011)	
Iteration: 3600	Total Loss: tensor(2742.9236)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4699)	phi BC Loss: tensor(5.5714e-12)	mu
BC Loss: tensor(6.3776)	NS PDE Loss: tensor(2.3170)	NS Div Free Loss: tensor(0.0011)	
Iteration: 3800	Total Loss: tensor(2750.5015)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4699)	phi BC Loss: tensor(8.0265e-12)	mu
BC Loss: tensor(6.3531)	NS PDE Loss: tensor(2.3245)	NS Div Free Loss: tensor(0.0011)	
Iteration: 4000	Total Loss: tensor(3244.8040)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4699)	phi BC Loss: tensor(7.3578e-12)	mu
BC Loss: tensor(6.3303)	NS PDE Loss: tensor(2.8187)	NS Div Free Loss: tensor(0.0011)	
Iteration: 4200	Total Loss: tensor(2767.5103)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4698)	phi BC Loss: tensor(6.7756e-12)	mu
BC Loss: tensor(6.3071)	NS PDE Loss: tensor(2.3414)	NS Div Free Loss: tensor(0.0011)	
Iteration: 4400	Total Loss: tensor(2777.9929)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4698)	phi BC Loss: tensor(6.2573e-12)	mu
BC Loss: tensor(6.2852)	NS PDE Loss: tensor(2.3522)	NS Div Free Loss: tensor(0.0011)	
Iteration: 4600	Total Loss: tensor(2788.4026)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4698)	phi BC Loss: tensor(5.8075e-12)	mu

BC Loss: tensor(6.2637)	NS PDE Loss: tensor(2.3626)	NS Div Free Loss: tensor(0.0011)	
Iteration: 4800	Total Loss: tensor(2793.7754)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4698)	phi BC Loss: tensor(5.3722e-12)	mu
BC Loss: tensor(6.2426)	NS PDE Loss: tensor(2.3680)	NS Div Free Loss: tensor(0.0011)	
Iteration: 5000	Total Loss: tensor(3296.0598)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4699)	phi BC Loss: tensor(7.1085e-12)	mu
BC Loss: tensor(6.2226)	NS PDE Loss: tensor(2.8706)	NS Div Free Loss: tensor(0.0011)	
Iteration: 5200	Total Loss: tensor(2798.1248)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4698)	phi BC Loss: tensor(1.8214e-11)	mu
BC Loss: tensor(6.2014)	NS PDE Loss: tensor(2.3728)	NS Div Free Loss: tensor(0.0012)	
Iteration: 5400	Total Loss: tensor(2796.6868)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4699)	phi BC Loss: tensor(1.2294e-10)	mu
BC Loss: tensor(6.1812)	NS PDE Loss: tensor(2.3714)	NS Div Free Loss: tensor(0.0012)	
Iteration: 5600	Total Loss: tensor(2785.2759)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4699)	phi BC Loss: tensor(2.3575e-10)	mu
BC Loss: tensor(6.1612)	NS PDE Loss: tensor(2.3604)	NS Div Free Loss: tensor(0.0012)	
Iteration: 5800	Total Loss: tensor(2784.2471)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4699)	phi BC Loss: tensor(2.8592e-10)	mu
BC Loss: tensor(6.1415)	NS PDE Loss: tensor(2.3597)	NS Div Free Loss: tensor(0.0012)	
Iteration: 6000	Total Loss: tensor(3304.2280)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4701)	phi BC Loss: tensor(3.5259e-10)	mu
BC Loss: tensor(6.1233)	NS PDE Loss: tensor(2.8804)	NS Div Free Loss: tensor(0.0012)	
Iteration: 6200	Total Loss: tensor(3136.8843)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4708)	phi BC Loss: tensor(4.8961e-10)	mu
BC Loss: tensor(6.1036)	NS PDE Loss: tensor(2.7150)	NS Div Free Loss: tensor(0.0011)	
Iteration: 6400	Total Loss: tensor(8978.0361)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.4624)	phi BC Loss: tensor(2.7678e-09)	mu
BC Loss: tensor(6.0736)	NS PDE Loss: tensor(8.5373)	NS Div Free Loss: tensor(0.0011)	
Iteration: 6600	Total Loss: tensor(63718.4766)		
IC Loss: tensor(0.0051)	u BC Loss: tensor(0.4219)	phi BC Loss: tensor(2.8242e-10)	mu
BC Loss: tensor(6.0603)	NS PDE Loss: tensor(63.2007)	NS Div Free Loss: tensor(0.0010)	
Iteration: 6800	Total Loss: tensor(51896.8047)		
IC Loss: tensor(0.0056)	u BC Loss: tensor(0.4069)	phi BC Loss: tensor(4.9410e-10)	mu
BC Loss: tensor(6.2158)	NS PDE Loss: tensor(51.3298)	NS Div Free Loss: tensor(0.0008)	
Iteration: 7000	Total Loss: tensor(4439.9287)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.4519)	phi BC Loss: tensor(2.8807e-09)	mu
BC Loss: tensor(6.3203)	NS PDE Loss: tensor(3.9962)	NS Div Free Loss: tensor(0.0008)	
Iteration: 7200	Total Loss: tensor(1941.1813)		
IC Loss: tensor(0.0089)	u BC Loss: tensor(0.4544)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(6.3429)	NS PDE Loss: tensor(1.0476)	NS Div Free Loss: tensor(0.0008)	
Iteration: 7400	Total Loss: tensor(2421.5315)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4664)	phi BC Loss: tensor(2.2419e-06)	mu

BC Loss: tensor(6.3168)	NS PDE Loss: tensor(1.9977)	NS Div Free Loss: tensor(0.0008)	
Iteration: 7600	Total Loss: tensor(7638.4277)		
IC Loss: tensor(0.0046)	u BC Loss: tensor(0.4433)	phi BC Loss: tensor(2.7506e-06)	mu
BC Loss: tensor(6.3260)	NS PDE Loss: tensor(7.1735)	NS Div Free Loss: tensor(0.0008)	
Iteration: 7800	Total Loss: tensor(2256.1172)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4657)	phi BC Loss: tensor(2.1442e-06)	mu
BC Loss: tensor(6.2723)	NS PDE Loss: tensor(1.8310)	NS Div Free Loss: tensor(0.0008)	
Iteration: 8000	Total Loss: tensor(26441.7949)		
IC Loss: tensor(0.0052)	u BC Loss: tensor(0.4240)	phi BC Loss: tensor(3.2062e-06)	mu
BC Loss: tensor(6.3878)	NS PDE Loss: tensor(25.9182)	NS Div Free Loss: tensor(0.0009)	
Iteration: 8200	Total Loss: tensor(8829.9121)		
IC Loss: tensor(0.0054)	u BC Loss: tensor(0.4150)	phi BC Loss: tensor(1.8358e-07)	mu
BC Loss: tensor(6.4945)	NS PDE Loss: tensor(8.2835)	NS Div Free Loss: tensor(0.0008)	
Iteration: 8400	Total Loss: tensor(4593.0366)		
IC Loss: tensor(0.0055)	u BC Loss: tensor(0.4105)	phi BC Loss: tensor(4.5804e-07)	mu
BC Loss: tensor(6.6081)	NS PDE Loss: tensor(4.0347)	NS Div Free Loss: tensor(0.0007)	
Iteration: 8600	Total Loss: tensor(3825.9326)		
IC Loss: tensor(0.0054)	u BC Loss: tensor(0.4119)	phi BC Loss: tensor(9.7089e-07)	mu
BC Loss: tensor(6.6874)	NS PDE Loss: tensor(3.2753)	NS Div Free Loss: tensor(0.0007)	
Iteration: 8800	Total Loss: tensor(1027.6067)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.4437)	phi BC Loss: tensor(1.0879e-07)	mu
BC Loss: tensor(6.6318)	NS PDE Loss: tensor(0.5701)	NS Div Free Loss: tensor(0.0006)	
Iteration: 9000	Total Loss: tensor(5333.4771)		
IC Loss: tensor(0.0044)	u BC Loss: tensor(0.4482)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(6.5225)	NS PDE Loss: tensor(4.8867)	NS Div Free Loss: tensor(0.0006)	
Iteration: 9200	Total Loss: tensor(37169.1914)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4594)	phi BC Loss: tensor(7.3634e-07)	mu
BC Loss: tensor(6.5461)	NS PDE Loss: tensor(36.7382)	NS Div Free Loss: tensor(0.0007)	
Iteration: 9400	Total Loss: tensor(14251.5703)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.4543)	phi BC Loss: tensor(3.3249e-07)	mu
BC Loss: tensor(6.5229)	NS PDE Loss: tensor(13.8107)	NS Div Free Loss: tensor(0.0007)	
Iteration: 9600	Total Loss: tensor(3468.5027)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4673)	phi BC Loss: tensor(8.4484e-06)	mu
BC Loss: tensor(6.4433)	NS PDE Loss: tensor(3.0469)	NS Div Free Loss: tensor(0.0007)	
Iteration: 9800	Total Loss: tensor(2571.9773)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4707)	phi BC Loss: tensor(2.7802e-05)	mu
BC Loss: tensor(6.3340)	NS PDE Loss: tensor(2.1539)	NS Div Free Loss: tensor(0.0007)	
Iteration: 10000	Total Loss: tensor(3158.6672)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4707)	phi BC Loss: tensor(0.0242)	mu BC Loss:
tensor(6.2249)	NS PDE Loss: tensor(2.7415)	NS Div Free Loss: tensor(0.0006)	
Iteration: 10200	Total Loss: tensor(2847.7788)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4708)	phi BC Loss: tensor(0.0147)	mu BC Loss:


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tensor(6.1366) NS PDE Loss: tensor(2.4308)    NS Div Free Loss: tensor(0.0006)
Iteration: 10400      Total Loss: tensor(2937.7874)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4706)      phi BC Loss: tensor(0.0100)      mu BC Loss:
tensor(6.0600) NS PDE Loss: tensor(2.5208)    NS Div Free Loss: tensor(0.0006)
Iteration: 10600      Total Loss: tensor(3010.8923)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4705)      phi BC Loss: tensor(0.0076)      mu BC Loss:
tensor(5.9933) NS PDE Loss: tensor(2.5931)    NS Div Free Loss: tensor(0.0006)
Iteration: 10800      Total Loss: tensor(3066.6021)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4704)      phi BC Loss: tensor(0.0052)      mu BC Loss:
tensor(5.9344) NS PDE Loss: tensor(2.6483)    NS Div Free Loss: tensor(0.0006)
Iteration: 11000      Total Loss: tensor(3636.2510)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4702)      phi BC Loss: tensor(0.0030)      mu BC Loss:
tensor(5.8809) NS PDE Loss: tensor(3.2180)    NS Div Free Loss: tensor(0.0006)
Iteration: 11200      Total Loss: tensor(3163.4846)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4701)      phi BC Loss: tensor(0.0020)      mu BC Loss:
tensor(5.8339) NS PDE Loss: tensor(2.7444)    NS Div Free Loss: tensor(0.0006)
Iteration: 11400      Total Loss: tensor(3200.5317)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4700)      phi BC Loss: tensor(0.0016)      mu BC Loss:
tensor(5.7883) NS PDE Loss: tensor(2.7818)    NS Div Free Loss: tensor(0.0006)
Iteration: 11600      Total Loss: tensor(3222.0251)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4700)      phi BC Loss: tensor(1.0394e-05)      mu
BC Loss: tensor(5.7433)      NS PDE Loss: tensor(2.8033)    NS Div Free Loss: tensor(0.0006)
Iteration: 11800      Total Loss: tensor(3234.1062)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4699)      phi BC Loss: tensor(1.6673e-09)      mu
BC Loss: tensor(5.6995)      NS PDE Loss: tensor(2.8150)    NS Div Free Loss: tensor(0.0006)
Iteration: 12000      Total Loss: tensor(3784.6687)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4698)      phi BC Loss: tensor(1.3812e-10)      mu
BC Loss: tensor(5.6563)      NS PDE Loss: tensor(3.3656)    NS Div Free Loss: tensor(0.0006)
Iteration: 12200      Total Loss: tensor(2681.9163)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4698)      phi BC Loss: tensor(0.)      mu BC Loss:
tensor(5.6184) NS PDE Loss: tensor(2.2628)    NS Div Free Loss: tensor(0.0006)
Iteration: 12400      Total Loss: tensor(2480.6628)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4699)      phi BC Loss: tensor(0.)      mu BC Loss:
tensor(5.5857) NS PDE Loss: tensor(2.0619)    NS Div Free Loss: tensor(0.0006)
Iteration: 12600      Total Loss: tensor(3025.8989)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4696)      phi BC Loss: tensor(0.)      mu BC Loss:
tensor(5.5511) NS PDE Loss: tensor(2.6071)    NS Div Free Loss: tensor(0.0006)
Iteration: 12800      Total Loss: tensor(3272.8076)
IC Loss: tensor(0.0041)      u BC Loss: tensor(0.4698)      phi BC Loss: tensor(0.)      mu BC Loss:
tensor(5.5287) NS PDE Loss: tensor(2.8542)    NS Div Free Loss: tensor(0.0006)
Iteration: 13000      Total Loss: tensor(27091.1328)
IC Loss: tensor(0.0552)      u BC Loss: tensor(0.4469)      phi BC Loss: tensor(0.)      mu BC Loss:

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tensor(5.6047)	NS PDE Loss:	tensor(21.5676)	NS Div Free Loss:	tensor(0.0009)	
Iteration: 13200	Total Loss:	tensor(3660.2917)			
IC Loss:	tensor(0.0065)	u BC Loss:	tensor(0.4078)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(5.7594)	NS PDE Loss:	tensor(3.0046)	NS Div Free Loss:	tensor(0.0004)	
Iteration: 13400	Total Loss:	tensor(4416.7607)			
IC Loss:	tensor(0.0065)	u BC Loss:	tensor(0.4016)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(5.9650)	NS PDE Loss:	tensor(3.7607)	NS Div Free Loss:	tensor(0.0004)	
Iteration: 13600	Total Loss:	tensor(4609.5430)			
IC Loss:	tensor(0.0062)	u BC Loss:	tensor(0.4040)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(6.1092)	NS PDE Loss:	tensor(3.9834)	NS Div Free Loss:	tensor(0.0003)	
Iteration: 13800	Total Loss:	tensor(4705.4756)			
IC Loss:	tensor(0.0059)	u BC Loss:	tensor(0.4071)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(6.2100)	NS PDE Loss:	tensor(4.1063)	NS Div Free Loss:	tensor(0.0003)	
Iteration: 14000	Total Loss:	tensor(16336.2822)			
IC Loss:	tensor(0.0051)	u BC Loss:	tensor(0.4279)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(6.2827)	NS PDE Loss:	tensor(15.8196)	NS Div Free Loss:	tensor(0.0004)	
Iteration: 14200	Total Loss:	tensor(2632.9351)			
IC Loss:	tensor(0.0044)	u BC Loss:	tensor(0.4627)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(6.3258)	NS PDE Loss:	tensor(2.1839)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 14400	Total Loss:	tensor(2474.8289)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.4697)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(6.2206)	NS PDE Loss:	tensor(2.0371)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 14600	Total Loss:	tensor(2054.5911)			
IC Loss:	tensor(0.0043)	u BC Loss:	tensor(0.4719)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(6.0952)	NS PDE Loss:	tensor(1.6225)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 14800	Total Loss:	tensor(2053.0662)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.4724)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(5.9946)	NS PDE Loss:	tensor(1.6241)	NS Div Free Loss:	tensor(0.0005)	
Iteration: 15000	Total Loss:	tensor(2411.2300)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.4726)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(5.9163)	NS PDE Loss:	tensor(1.9844)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 15200	Total Loss:	tensor(2147.1128)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.4723)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(5.8521)	NS PDE Loss:	tensor(1.7216)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 15400	Total Loss:	tensor(2672.7305)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.4723)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(5.8015)	NS PDE Loss:	tensor(2.2493)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 15600	Total Loss:	tensor(2602.4326)			
IC Loss:	tensor(0.0042)	u BC Loss:	tensor(0.4721)	phi BC Loss:	tensor(0.)
mu BC Loss:					
tensor(5.7550)	NS PDE Loss:	tensor(2.1793)	NS Div Free Loss:	tensor(0.0006)	
Iteration: 15800	Total Loss:	tensor(2627.5730)			
IC Loss:	tensor(0.0041)	u BC Loss:	tensor(0.4723)	phi BC Loss:	tensor(0.)
mu BC Loss:					

tensor(5.7134)	NS PDE Loss: tensor(2.2059)	NS Div Free Loss: tensor(0.0006)	
Iteration: 16000	Total Loss: tensor(3128.0237)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4722)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.6772)	NS PDE Loss: tensor(2.7070)	NS Div Free Loss: tensor(0.0007)	
Iteration: 16200	Total Loss: tensor(2699.2019)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4721)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.6427)	NS PDE Loss: tensor(2.2792)	NS Div Free Loss: tensor(0.0007)	
Iteration: 16400	Total Loss: tensor(2734.3318)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4720)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.6118)	NS PDE Loss: tensor(2.3150)	NS Div Free Loss: tensor(0.0007)	
Iteration: 16600	Total Loss: tensor(2767.5117)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4720)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.5833)	NS PDE Loss: tensor(2.3488)	NS Div Free Loss: tensor(0.0007)	
Iteration: 16800	Total Loss: tensor(2797.9775)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4719)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.5566)	NS PDE Loss: tensor(2.3798)	NS Div Free Loss: tensor(0.0007)	
Iteration: 17000	Total Loss: tensor(3325.7229)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4720)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.5326)	NS PDE Loss: tensor(2.9080)	NS Div Free Loss: tensor(0.0007)	
Iteration: 17200	Total Loss: tensor(2861.3689)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4717)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.5079)	NS PDE Loss: tensor(2.4435)	NS Div Free Loss: tensor(0.0008)	
Iteration: 17400	Total Loss: tensor(3393.7512)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4703)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.4945)	NS PDE Loss: tensor(2.9736)	NS Div Free Loss: tensor(0.0008)	
Iteration: 17600	Total Loss: tensor(3389.0142)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4720)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.4789)	NS PDE Loss: tensor(2.9731)	NS Div Free Loss: tensor(0.0007)	
Iteration: 17800	Total Loss: tensor(3616.0320)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4724)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.4605)	NS PDE Loss: tensor(3.2003)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18000	Total Loss: tensor(21054.2695)		
IC Loss: tensor(0.0045)	u BC Loss: tensor(0.4449)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.5244)	NS PDE Loss: tensor(20.5995)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18200	Total Loss: tensor(12299.2725)		
IC Loss: tensor(0.0043)	u BC Loss: tensor(0.4523)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.6245)	NS PDE Loss: tensor(11.8579)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18400	Total Loss: tensor(7021.6084)		
IC Loss: tensor(0.0042)	u BC Loss: tensor(0.4586)	phi BC Loss: tensor(0.)	mu BC Loss:
tensor(5.6350)	NS PDE Loss: tensor(6.5917)	NS Div Free Loss: tensor(0.0007)	
Iteration: 18600	Total Loss: tensor(4514.3926)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.4674)	phi BC Loss: tensor(0.)	mu BC Loss:

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tensor(5.6307) NS PDE Loss: tensor(4.0946) NS Div Free Loss: tensor(0.0008)
Iteration: 18800 Total Loss: tensor(3013.0659)
IC Loss: tensor(0.0041) u BC Loss: tensor(0.4717) phi BC Loss: tensor(0.) mu BC Loss:
tensor(5.5465) NS PDE Loss: tensor(2.5983) NS Div Free Loss: tensor(0.0008)
Iteration: 19000 Total Loss: tensor(2466.4780)
IC Loss: tensor(0.0041) u BC Loss: tensor(0.4715) phi BC Loss: tensor(0.) mu BC Loss:
tensor(5.4625) NS PDE Loss: tensor(2.0538) NS Div Free Loss: tensor(0.0007)
Iteration: 19200 Total Loss: tensor(7137.3281)
IC Loss: tensor(0.0051) u BC Loss: tensor(0.4232) phi BC Loss: tensor(0.) mu BC Loss:
tensor(5.6127) NS PDE Loss: tensor(6.6249) NS Div Free Loss: tensor(0.0007)
Iteration: 19400 Total Loss: tensor(8808.9854)
IC Loss: tensor(0.0054) u BC Loss: tensor(0.4100) phi BC Loss: tensor(0.) mu BC Loss:
tensor(5.7788) NS PDE Loss: tensor(8.2590) NS Div Free Loss: tensor(0.0006)
Iteration: 19600 Total Loss: tensor(5624.9092)
IC Loss: tensor(0.0055) u BC Loss: tensor(0.4075) phi BC Loss: tensor(0.) mu BC Loss:
tensor(5.8825) NS PDE Loss: tensor(5.0685) NS Div Free Loss: tensor(0.0006)
Iteration: 19800 Total Loss: tensor(4684.5273)
IC Loss: tensor(0.0056) u BC Loss: tensor(0.4045) phi BC Loss: tensor(0.) mu BC Loss:
tensor(5.9188) NS PDE Loss: tensor(4.1151) NS Div Free Loss: tensor(0.0005)
Iteration: 20000 Total Loss: tensor(22205.2852)
IC Loss: tensor(0.0055) u BC Loss: tensor(0.4058) phi BC Loss: tensor(0.) mu BC Loss:
tensor(5.8804) NS PDE Loss: tensor(21.6475) NS Div Free Loss: tensor(0.0004)
Current Final Time: 0.6 Current Learning Rate: 0.005
Iteration: 200 Total Loss: tensor(4822.1729)
IC Loss: tensor(0.0045) u BC Loss: tensor(0.4881) phi BC Loss: tensor(1.8699e-10) mu
BC Loss: tensor(6.9334) NS PDE Loss: tensor(4.3616) NS Div Free Loss: tensor(0.0002)
Iteration: 400 Total Loss: tensor(9419.1953)
IC Loss: tensor(0.0043) u BC Loss: tensor(0.5018) phi BC Loss: tensor(8.0150e-10) mu
BC Loss: tensor(7.0057) NS PDE Loss: tensor(8.9815) NS Div Free Loss: tensor(0.0003)
Iteration: 600 Total Loss: tensor(5130.8018)
IC Loss: tensor(0.0046) u BC Loss: tensor(0.4854) phi BC Loss: tensor(2.0948e-09) mu
BC Loss: tensor(7.0545) NS PDE Loss: tensor(4.6617) NS Div Free Loss: tensor(0.0003)
Iteration: 800 Total Loss: tensor(16476.8965)
IC Loss: tensor(0.0045) u BC Loss: tensor(0.4907) phi BC Loss: tensor(5.4863e-09) mu
BC Loss: tensor(7.1179) NS PDE Loss: tensor(16.0141) NS Div Free Loss: tensor(0.0004)
Iteration: 1000 Total Loss: tensor(6508.9097)
IC Loss: tensor(0.0045) u BC Loss: tensor(0.4944) phi BC Loss: tensor(1.4797e-08) mu
BC Loss: tensor(7.1023) NS PDE Loss: tensor(6.0555) NS Div Free Loss: tensor(0.0004)
Iteration: 1200 Total Loss: tensor(9511.8994)
IC Loss: tensor(0.0056) u BC Loss: tensor(0.4566) phi BC Loss: tensor(2.5953e-08) mu
BC Loss: tensor(7.2382) NS PDE Loss: tensor(8.9456) NS Div Free Loss: tensor(0.0006)
Iteration: 1400 Total Loss: tensor(3176.1204)

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IC Loss: tensor(0.0042)	u BC Loss: tensor(0.5045)	phi BC Loss: tensor(7.8739e-08)	mu
BC Loss: tensor(7.0039)	NS PDE Loss: tensor(2.7440)	NS Div Free Loss: tensor(0.0004)	
Iteration: 1600	Total Loss: tensor(2950.6475)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5127)	phi BC Loss: tensor(2.6593e-07)	mu
BC Loss: tensor(6.9789)	NS PDE Loss: tensor(2.5287)	NS Div Free Loss: tensor(0.0004)	
Iteration: 1800	Total Loss: tensor(2863.7834)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5166)	phi BC Loss: tensor(9.2791e-07)	mu
BC Loss: tensor(6.9479)	NS PDE Loss: tensor(2.4456)	NS Div Free Loss: tensor(0.0004)	
Iteration: 2000	Total Loss: tensor(3635.9292)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5179)	phi BC Loss: tensor(2.9144e-06)	mu
BC Loss: tensor(6.9222)	NS PDE Loss: tensor(3.2188)	NS Div Free Loss: tensor(0.0005)	
Iteration: 2200	Total Loss: tensor(3453.9351)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5188)	phi BC Loss: tensor(8.2979e-06)	mu
BC Loss: tensor(6.8974)	NS PDE Loss: tensor(3.0374)	NS Div Free Loss: tensor(0.0005)	
Iteration: 2400	Total Loss: tensor(3646.3989)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5193)	phi BC Loss: tensor(2.0704e-05)	mu
BC Loss: tensor(6.8728)	NS PDE Loss: tensor(3.2303)	NS Div Free Loss: tensor(0.0005)	
Iteration: 2600	Total Loss: tensor(3424.5039)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5191)	phi BC Loss: tensor(4.2566e-05)	mu
BC Loss: tensor(6.8493)	NS PDE Loss: tensor(3.0082)	NS Div Free Loss: tensor(0.0006)	
Iteration: 2800	Total Loss: tensor(3461.0366)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(6.9592e-05)	mu
BC Loss: tensor(6.8304)	NS PDE Loss: tensor(3.0449)	NS Div Free Loss: tensor(0.0006)	
Iteration: 3000	Total Loss: tensor(4034.8462)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(9.0310e-05)	mu
BC Loss: tensor(6.8096)	NS PDE Loss: tensor(3.6189)	NS Div Free Loss: tensor(0.0006)	
Iteration: 3200	Total Loss: tensor(3519.1978)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5195)	phi BC Loss: tensor(9.7745e-05)	mu
BC Loss: tensor(6.7902)	NS PDE Loss: tensor(3.1031)	NS Div Free Loss: tensor(0.0006)	
Iteration: 3400	Total Loss: tensor(3525.6035)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(9.9631e-05)	mu
BC Loss: tensor(6.7715)	NS PDE Loss: tensor(3.1099)	NS Div Free Loss: tensor(0.0007)	
Iteration: 3600	Total Loss: tensor(3524.6677)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(9.5773e-05)	mu
BC Loss: tensor(6.7532)	NS PDE Loss: tensor(3.1089)	NS Div Free Loss: tensor(0.0007)	
Iteration: 3800	Total Loss: tensor(3513.0042)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(9.2025e-05)	mu
BC Loss: tensor(6.7352)	NS PDE Loss: tensor(3.0972)	NS Div Free Loss: tensor(0.0007)	
Iteration: 4000	Total Loss: tensor(4048.9846)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(9.1168e-05)	mu
BC Loss: tensor(6.7175)	NS PDE Loss: tensor(3.6333)	NS Div Free Loss: tensor(0.0008)	
Iteration: 4200	Total Loss: tensor(3463.3340)		

IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(0.0001)	mu BC Loss: tensor(6.6999)
NS PDE Loss: tensor(3.0490) NS Div Free Loss: tensor(0.0008)			
Iteration: 4400 Total Loss: tensor(3434.0876)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5193)	phi BC Loss: tensor(0.0002)	mu BC Loss: tensor(6.6824)
NS PDE Loss: tensor(3.0205) NS Div Free Loss: tensor(0.0008)			
Iteration: 4600 Total Loss: tensor(3400.6577)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5193)	phi BC Loss: tensor(0.0002)	mu BC Loss: tensor(6.6650)
NS PDE Loss: tensor(2.9875) NS Div Free Loss: tensor(0.0008)			
Iteration: 4800 Total Loss: tensor(3363.8779)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5193)	phi BC Loss: tensor(0.0002)	mu BC Loss: tensor(6.6476)
NS PDE Loss: tensor(2.9506) NS Div Free Loss: tensor(0.0009)			
Iteration: 5000 Total Loss: tensor(3875.2227)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5192)	phi BC Loss: tensor(0.0001)	mu BC Loss: tensor(6.6302)
NS PDE Loss: tensor(3.4620) NS Div Free Loss: tensor(0.0009)			
Iteration: 5200 Total Loss: tensor(3280.4507)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5192)	phi BC Loss: tensor(0.0001)	mu BC Loss: tensor(6.6129)
NS PDE Loss: tensor(2.8671) NS Div Free Loss: tensor(0.0009)			
Iteration: 5400 Total Loss: tensor(3232.6865)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5192)	phi BC Loss: tensor(9.7822e-05)	mu BC Loss: tensor(6.5955)
BC Loss: tensor(6.5955)	NS PDE Loss: tensor(2.8192)	NS Div Free Loss: tensor(0.0009)	
Iteration: 5600 Total Loss: tensor(3182.9175)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5192)	phi BC Loss: tensor(8.4043e-05)	mu BC Loss: tensor(6.5781)
BC Loss: tensor(6.5781)	NS PDE Loss: tensor(2.7694)	NS Div Free Loss: tensor(0.0010)	
Iteration: 5800 Total Loss: tensor(3130.4265)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5192)	phi BC Loss: tensor(7.2511e-05)	mu BC Loss: tensor(6.5608)
BC Loss: tensor(6.5608)	NS PDE Loss: tensor(2.7168)	NS Div Free Loss: tensor(0.0010)	
Iteration: 6000 Total Loss: tensor(3600.9553)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5192)	phi BC Loss: tensor(6.2797e-05)	mu BC Loss: tensor(6.5434)
BC Loss: tensor(6.5434)	NS PDE Loss: tensor(3.1874)	NS Div Free Loss: tensor(0.0010)	
Iteration: 6200 Total Loss: tensor(3015.7944)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5191)	phi BC Loss: tensor(5.4428e-05)	mu BC Loss: tensor(6.5260)
BC Loss: tensor(6.5260)	NS PDE Loss: tensor(2.6020)	NS Div Free Loss: tensor(0.0010)	
Iteration: 6400 Total Loss: tensor(2956.4470)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5191)	phi BC Loss: tensor(4.7146e-05)	mu BC Loss: tensor(6.5085)
BC Loss: tensor(6.5085)	NS PDE Loss: tensor(2.5426)	NS Div Free Loss: tensor(0.0011)	
Iteration: 6600 Total Loss: tensor(3029.1750)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5182)	phi BC Loss: tensor(4.1281e-05)	mu BC Loss: tensor(6.4916)
BC Loss: tensor(6.4916)	NS PDE Loss: tensor(2.6148)	NS Div Free Loss: tensor(0.0011)	
Iteration: 6800 Total Loss: tensor(3184.0879)			
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5193)	phi BC Loss: tensor(3.6136e-05)	mu BC Loss: tensor(6.4713)
BC Loss: tensor(6.4713)	NS PDE Loss: tensor(2.7702)	NS Div Free Loss: tensor(0.0011)	
Iteration: 7000 Total Loss: tensor(3663.2439)			

IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5191)	phi BC Loss: tensor(3.2061e-05)	mu
BC Loss: tensor(6.4562)	NS PDE Loss: tensor(3.2494)	NS Div Free Loss: tensor(0.0011)	
Iteration: 7200	Total Loss: tensor(3203.2515)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5168)	phi BC Loss: tensor(2.8494e-05)	mu
BC Loss: tensor(6.4394)	NS PDE Loss: tensor(2.7874)	NS Div Free Loss: tensor(0.0011)	
Iteration: 7400	Total Loss: tensor(3173.4111)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5189)	phi BC Loss: tensor(2.5429e-05)	mu
BC Loss: tensor(6.4206)	NS PDE Loss: tensor(2.7589)	NS Div Free Loss: tensor(0.0012)	
Iteration: 7600	Total Loss: tensor(3186.6743)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5175)	phi BC Loss: tensor(2.2908e-05)	mu
BC Loss: tensor(6.4046)	NS PDE Loss: tensor(2.7707)	NS Div Free Loss: tensor(0.0011)	
Iteration: 7800	Total Loss: tensor(3150.1641)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5188)	phi BC Loss: tensor(2.0458e-05)	mu
BC Loss: tensor(6.3860)	NS PDE Loss: tensor(2.7354)	NS Div Free Loss: tensor(0.0012)	
Iteration: 8000	Total Loss: tensor(3593.3494)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5188)	phi BC Loss: tensor(1.8280e-05)	mu
BC Loss: tensor(6.3623)	NS PDE Loss: tensor(3.1785)	NS Div Free Loss: tensor(0.0012)	
Iteration: 8200	Total Loss: tensor(3135.2625)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5186)	phi BC Loss: tensor(1.6289e-05)	mu
BC Loss: tensor(6.3541)	NS PDE Loss: tensor(2.7200)	NS Div Free Loss: tensor(0.0012)	
Iteration: 8400	Total Loss: tensor(3050.0459)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5194)	phi BC Loss: tensor(1.4435e-05)	mu
BC Loss: tensor(6.3296)	NS PDE Loss: tensor(2.6359)	NS Div Free Loss: tensor(0.0012)	
Iteration: 8600	Total Loss: tensor(3177.3066)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5178)	phi BC Loss: tensor(1.2903e-05)	mu
BC Loss: tensor(6.3204)	NS PDE Loss: tensor(2.7611)	NS Div Free Loss: tensor(0.0012)	
Iteration: 8800	Total Loss: tensor(3161.8481)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5182)	phi BC Loss: tensor(1.1332e-05)	mu
BC Loss: tensor(6.2975)	NS PDE Loss: tensor(2.7452)	NS Div Free Loss: tensor(0.0013)	
Iteration: 9000	Total Loss: tensor(3572.1526)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5189)	phi BC Loss: tensor(9.7036e-06)	mu
BC Loss: tensor(6.2806)	NS PDE Loss: tensor(3.1572)	NS Div Free Loss: tensor(0.0013)	
Iteration: 9200	Total Loss: tensor(3135.3318)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5189)	phi BC Loss: tensor(7.9987e-06)	mu
BC Loss: tensor(6.2692)	NS PDE Loss: tensor(2.7197)	NS Div Free Loss: tensor(0.0013)	
Iteration: 9400	Total Loss: tensor(3041.6755)		
IC Loss: tensor(0.0041)	u BC Loss: tensor(0.5195)	phi BC Loss: tensor(6.9338e-06)	mu
BC Loss: tensor(6.2432)	NS PDE Loss: tensor(2.6275)	NS Div Free Loss: tensor(0.0013)	

In []:

In []: