Running Data

from \_\_future\_\_ import print\_function

import datetime

import numpy as np

from matplotlib import cm, pyplot as plt

from matplotlib.dates import YearLocator, MonthLocator

try:

from matplotlib.finance import quotes\_historical\_yahoo\_ochl

except ImportError:

# For Matplotlib prior to 1.5.

from matplotlib.finance import (

quotes\_historical\_yahoo as quotes\_historical\_yahoo\_ochl

)

from hmmlearn.hmm import GaussianHMM

print(\_\_doc\_\_)

*"Import data from excel"*

from xlrd import open\_workbook

book = open\_workbook(*'data.xlsx'*)

sheet = book.sheet\_by\_index(0)

time\_x = []

current\_y = []

for k in range(1,sheet.nrows):

time\_x.append(str(sheet.row\_values(k)[1-1]))

current\_y.append(str(sheet.row\_values(k)[2-1]))

time\_xx = map(float, time\_x)

current\_yy = map(float, current\_y)

x = np.asarray(time\_xx)

y = np.asarray(current\_yy)

X = np.reshape(y,(-1,1))

*"Run Gaussian HMM"*

print(*"fitting to HMM and decoding ..."*, end=*""*)

# Make an HMM instance and execute fit

model = GaussianHMM(n\_components=10, covariance\_type=*"full"*, n\_iter=1000).fit(X)

# Predict the optimal sequence of internal hidden state

hidden\_states = model.predict(X)

print(*"hidden\_states"*, len(hidden\_states), hidden\_states)

print(*"done"*)

*"Print All hidden state parameter"*

print(*"Transition matrix"*)

print(model.transmat\_)

print()

print(*"Means and vars of each hidden state"*)

for i in range(model.n\_components):

print(*"{0}th hidden state"*.format(i))

print(*"mean = "*, model.means\_[i])

print(*"var = "*, np.diag(model.covars\_[i]))

print()

*"Hidden state"*

result = []

test = hidden\_states[0]

for ind, i in enumerate(hidden\_states):

if i != test:

if len(result) == 0:

result.append([test,0,ind-1])

else:

start = result[-1][2]+1

result.append([test,start,ind-1])

test = i

print(result)

# for i in range(0,len(hidden\_states)):

# print(i, ",", hidden\_states[i])

*"Plot data and result"*

x\_plot = []

y\_plot = []

for i in result:

x\_plot.append(i[1])

x\_plot.append(i[2])

y\_plot.append(model.means\_[i[0]])

y\_plot.append(model.means\_[i[0]])

plt.figure(1)

plt.title(*"hmm Gaussian method fitting result vs data"*)

plt.plot(x,y, *'r'*)#, x,y, 'bo')

plt.plot(x\_plot, y\_plot, *'k'*)

plt.savefig(*"result10"*)

plt.show()

Result, n = 10, iter = 1000

hidden\_states 9937 [3 3 3 ... 6 6 6]

done

Transition matrix

[[4.55206055e-001 2.05650746e-002 1.71612222e-243 1.28177263e-001

7.20645805e-003 1.61912087e-002 1.41510235e-001 3.86590259e-002

8.48727370e-002 1.07611943e-001]

[1.35358880e-002 9.77379788e-001 0.00000000e+000 1.38483185e-038

9.08432387e-003 0.00000000e+000 0.00000000e+000 1.14527081e-138

0.00000000e+000 2.64420386e-027]

[3.68170931e-265 0.00000000e+000 9.90909091e-001 9.09090909e-003

0.00000000e+000 0.00000000e+000 0.00000000e+000 1.98185808e-123

0.00000000e+000 3.87644858e-305]

[1.00416192e-002 3.31787966e-122 4.98608677e-004 8.66452610e-001

2.24653483e-003 2.75429289e-003 4.15172137e-015 8.13968546e-002

2.42244918e-063 3.66094799e-002]

[1.41296717e-002 3.50870964e-003 0.00000000e+000 3.97550025e-003

9.73984670e-001 6.46594347e-165 3.89054213e-016 2.09877368e-026

4.40144801e-003 1.63583059e-015]

[3.15075645e-005 3.94452479e-243 0.00000000e+000 2.58022910e-003

9.56622483e-004 9.62352562e-001 9.19903194e-004 1.35912136e-050

2.70500004e-002 6.10917483e-003]

[1.25518437e-002 3.71860013e-005 0.00000000e+000 8.97288829e-039

9.70202127e-004 1.15892492e-059 9.39391333e-001 6.14687868e-065

4.30660143e-002 3.98342041e-003]

[7.85251914e-003 2.21198713e-151 4.90314923e-234 1.62218081e-001

2.35263958e-003 6.92126623e-056 8.27841852e-085 8.27576760e-001

1.60228864e-095 7.84729911e-033]

[1.35008183e-002 1.17931287e-003 0.00000000e+000 9.92917607e-025

1.56498665e-003 1.70930708e-002 6.51974610e-002 3.10286703e-004

8.97795024e-001 3.35903994e-003]

[1.87412037e-002 1.21439289e-067 4.62675586e-196 6.60435004e-002

1.93310635e-015 4.78763915e-003 8.64884754e-003 1.83061308e-007

3.49676227e-003 8.98281864e-001]]

Means and vars of each hidden state

0th hidden state

mean = [-5.37155017]

var = [0.01669278]

1th hidden state

mean = [-4.45951062]

var = [0.00293709]

2th hidden state

mean = [-3.36100879]

var = [0.00170159]

3th hidden state

mean = [-5.48935155]

var = [0.00046626]

4th hidden state

mean = [-4.98600292]

var = [0.01774987]

5th hidden state

mean = [-5.64500038]

var = [0.0011457]

6th hidden state

mean = [-5.56630195]

var = [0.00034131]

7th hidden state

mean = [-5.44506748]

var = [0.00105561]

8th hidden state

mean = [-5.59509013]

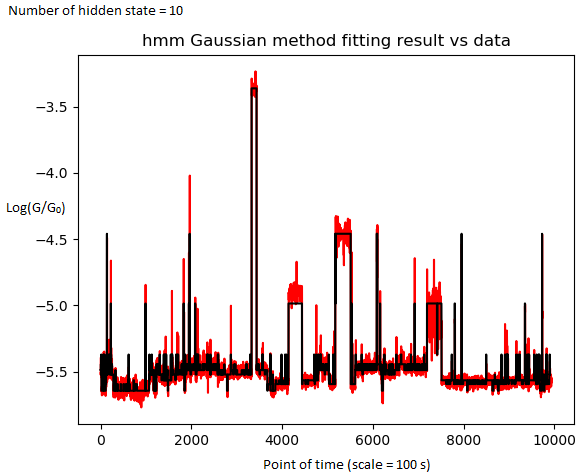
var = [0.00044852]

9th hidden state

mean = [-5.52266216]

var = [0.00051641]

[[3, 0, 5], [7, 6, 10], [3, 11, 11], [9, 12, 15], [0, 16, 16], [3, 17, 19], [5, 20, 62], [9, 63, 64], [0, 65, 68], [8, 69, 78], [0, 79, 79], [5, 80, 113], [8, 114, 123], [7, 124, 127], [3, 128, 129], [9, 130, 133], [0, 134, 135], [9, 136, 138], [0, 139, 140], [1, 141, 141], [0, 142, 142], [9, 143, 156], [3, 157, 157], [7, 158, 159], [3, 160, 164], [0, 165, 165], [3, 166, 174], [7, 175, 175], [3, 176, 180], [7, 181, 184], [3, 185, 190], [0, 191, 195], [9, 196, 209], [3, 210, 215], [7, 216, 216], [3, 217, 226], [4, 227, 227], [0, 228, 229], [9, 230, 232], [0, 233, 233], [9, 234, 240], [3, 241, 246], [7, 247, 252], [3, 253, 253], [9, 254, 282], [5, 283, 327], [3, 328, 328], [5, 329, 363], [8, 364, 381], [5, 382, 441], [8, 442, 453], [5, 454, 503], [8, 504, 517], [5, 518, 555], [8, 556, 566], [5, 567, 581], [8, 582, 593], [5, 594, 605], [8, 606, 611], [6, 612, 618], [0, 619, 619], [8, 620, 622], [5, 623, 627], [8, 628, 648], [5, 649, 724], [8, 725, 725], [6, 726, 737], [8, 738, 740], [5, 741, 768], [8, 769, 802], [5, 803, 990], [4, 991, 991], [0, 992, 992], [5, 993, 1069], [9, 1070, 1072], [6, 1073, 1076], [0, 1077, 1077], [3, 1078, 1090], [9, 1091, 1104], [3, 1105, 1113], [9, 1114, 1122], [3, 1123, 1124], [9, 1125, 1128], [0, 1129, 1129], [9, 1130, 1147], [3, 1148, 1153], [9, 1154, 1159], [3, 1160, 1166], [5, 1167, 1200], [3, 1201, 1201], [5, 1202, 1231], [3, 1232, 1234], [7, 1235, 1235], [3, 1236, 1251], [7, 1252, 1252], [3, 1253, 1261], [7, 1262, 1265], [3, 1266, 1270], [9, 1271, 1278], [3, 1279, 1288], [9, 1289, 1303], [0, 1304, 1304], [9, 1305, 1343], [6, 1344, 1353], [9, 1354, 1382], [6, 1383, 1393], [0, 1394, 1394], [6, 1395, 1409], [0, 1410, 1411], [6, 1412, 1433], [0, 1434, 1435], [6, 1436, 1446], [0, 1447, 1447], [6, 1448, 1458], [9, 1459, 1478], [3, 1479, 1482], [5, 1483, 1488], [8, 1489, 1489], [6, 1490, 1546], [0, 1547, 1548], [6, 1549, 1561], [9, 1562, 1570], [0, 1571, 1572], [9, 1573, 1579], [0, 1580, 1580], [9, 1581, 1584], [3, 1585, 1586], [9, 1587, 1593], [3, 1594, 1610], [9, 1611, 1649], [6, 1650, 1653], [9, 1654, 1663], [0, 1664, 1664], [9, 1665, 1682], [3, 1683, 1683], [7, 1684, 1684], [3, 1685, 1689], [0, 1690, 1692], [3, 1693, 1696], [9, 1697, 1702], [3, 1703, 1709], [0, 1710, 1710], [3, 1711, 1719], [9, 1720, 1732], [3, 1733, 1761], [9, 1762, 1784], [3, 1785, 1787], [7, 1788, 1788], [3, 1789, 1798], [7, 1799, 1800], [3, 1801, 1801], [9, 1802, 1811], [3, 1812, 1816], [7, 1817, 1819], [3, 1820, 1820], [9, 1821, 1830], [3, 1831, 1831], [4, 1832, 1832], [0, 1833, 1833], [9, 1834, 1838], [0, 1839, 1840], [9, 1841, 1848], [5, 1849, 1858], [9, 1859, 1865], [0, 1866, 1866], [3, 1867, 1881], [7, 1882, 1882], [3, 1883, 1885], [9, 1886, 1890], [3, 1891, 1896], [7, 1897, 1897], [3, 1898, 1911], [7, 1912, 1913], [3, 1914, 1928], [7, 1929, 1929], [3, 1930, 1939], [7, 1940, 1943], [3, 1944, 1946], [4, 1947, 1948], [3, 1949, 1956], [7, 1957, 1961], [3, 1962, 1962], [0, 1963, 1963], [1, 1964, 1964], [4, 1965, 1966], [3, 1967, 1979], [9, 1980, 1997], [3, 1998, 2006], [7, 2007, 2008], [3, 2009, 2040], [7, 2041, 2047], [3, 2048, 2059], [7, 2060, 2070], [3, 2071, 2081], [4, 2082, 2088], [0, 2089, 2089], [3, 2090, 2095], [9, 2096, 2117], [0, 2118, 2118], [3, 2119, 2120], [7, 2121, 2121], [3, 2122, 2136], [0, 2137, 2138], [3, 2139, 2150], [0, 2151, 2151], [3, 2152, 2192], [7, 2193, 2195], [3, 2196, 2249], [7, 2250, 2257], [3, 2258, 2262], [7, 2263, 2263], [3, 2264, 2266], [7, 2267, 2273], [3, 2274, 2281], [7, 2282, 2335], [3, 2336, 2338], [7, 2339, 2348], [0, 2349, 2351], [7, 2352, 2353], [3, 2354, 2361], [7, 2362, 2363], [3, 2364, 2365], [0, 2366, 2370], [7, 2371, 2387], [3, 2388, 2390], [7, 2391, 2393], [3, 2394, 2399], [7, 2400, 2413], [3, 2414, 2415], [9, 2416, 2419], [0, 2420, 2422], [9, 2423, 2425], [3, 2426, 2430], [7, 2431, 2431], [3, 2432, 2448], [7, 2449, 2485], [3, 2486, 2505], [7, 2506, 2514], [3, 2515, 2520], [7, 2521, 2527], [3, 2528, 2531], [7, 2532, 2533], [3, 2534, 2545], [7, 2546, 2563], [3, 2564, 2578], [9, 2579, 2585], [0, 2586, 2586], [3, 2587, 2591], [0, 2592, 2593], [9, 2594, 2599], [3, 2600, 2605], [7, 2606, 2606], [3, 2607, 2619], [9, 2620, 2652], [3, 2653, 2655], [9, 2656, 2664], [3, 2665, 2669], [9, 2670, 2693], [3, 2694, 2696], [9, 2697, 2715], [3, 2716, 2727], [7, 2728, 2728], [3, 2729, 2743], [9, 2744, 2786], [5, 2787, 2803], [9, 2804, 2870], [0, 2871, 2872], [3, 2873, 2879], [7, 2880, 2882], [3, 2883, 2923], [9, 2924, 2936], [3, 2937, 2943], [7, 2944, 2944], [3, 2945, 2968], [7, 2969, 2972], [3, 2973, 2988], [9, 2989, 2995], [3, 2996, 3012], [9, 3013, 3109], [3, 3110, 3152], [9, 3153, 3169], [3, 3170, 3175], [9, 3176, 3198], [3, 3199, 3207], [7, 3208, 3211], [3, 3212, 3220], [7, 3221, 3224], [3, 3225, 3239], [9, 3240, 3250], [3, 3251, 3258], [9, 3259, 3294], [0, 3295, 3295], [9, 3296, 3327], [3, 3328, 3328], [2, 3329, 3438], [3, 3439, 3444], [7, 3445, 3446], [3, 3447, 3456], [7, 3457, 3459], [3, 3460, 3466], [7, 3467, 3467], [3, 3468, 3487], [7, 3488, 3490], [3, 3491, 3503], [9, 3504, 3514], [3, 3515, 3569], [0, 3570, 3570], [3, 3571, 3575], [0, 3576, 3577], [3, 3578, 3617], [9, 3618, 3629], [3, 3630, 3676], [5, 3677, 3681], [8, 3682, 3735], [0, 3736, 3736], [8, 3737, 3742], [0, 3743, 3743], [5, 3744, 3796], [9, 3797, 3799], [5, 3800, 3851], [8, 3852, 3861], [6, 3862, 3877], [8, 3878, 3933], [6, 3934, 3972], [8, 3973, 3988], [0, 3989, 3989], [8, 3990, 4040], [6, 4041, 4050], [8, 4051, 4066], [0, 4067, 4067], [8, 4068, 4076], [6, 4077, 4079], [8, 4080, 4091], [6, 4092, 4097], [0, 4098, 4098], [6, 4099, 4112], [8, 4113, 4136], [6, 4137, 4142], [4, 4143, 4439], [8, 4440, 4452], [6, 4453, 4515], [8, 4516, 4525], [6, 4526, 4567], [8, 4568, 4578], [6, 4579, 4705], [0, 4706, 4706], [6, 4707, 4721], [8, 4722, 4723], [6, 4724, 4752], [0, 4753, 4754], [6, 4755, 4793], [0, 4794, 4794], [9, 4795, 4797], [3, 4798, 4801], [7, 4802, 4845], [0, 4846, 4846], [3, 4847, 4853], [0, 4854, 4854], [7, 4855, 4862], [3, 4863, 4866], [7, 4867, 4876], [3, 4877, 4879], [7, 4880, 4884], [3, 4885, 4895], [7, 4896, 4896], [3, 4897, 4913], [7, 4914, 4914], [3, 4915, 4939], [9, 4940, 4948], [3, 4949, 4951], [7, 4952, 4962], [3, 4963, 4968], [7, 4969, 4972], [3, 4973, 4984], [7, 4985, 4993], [3, 4994, 5000], [7, 5001, 5001], [3, 5002, 5007], [7, 5008, 5010], [3, 5011, 5018], [7, 5019, 5023], [3, 5024, 5029], [0, 5030, 5030], [6, 5031, 5042], [8, 5043, 5049], [9, 5050, 5055], [8, 5056, 5124], [0, 5125, 5125], [6, 5126, 5139], [8, 5140, 5153], [0, 5154, 5154], [6, 5155, 5158], [8, 5159, 5172], [1, 5173, 5177], [4, 5178, 5181], [1, 5182, 5512], [0, 5513, 5513], [8, 5514, 5528], [4, 5529, 5535], [8, 5536, 5546], [0, 5547, 5547], [8, 5548, 5611], [9, 5612, 5612], [3, 5613, 5622], [0, 5623, 5626], [3, 5627, 5630], [7, 5631, 5632], [3, 5633, 5672], [7, 5673, 5675], [3, 5676, 5691], [7, 5692, 5694], [3, 5695, 5699], [7, 5700, 5705], [3, 5706, 5710], [7, 5711, 5712], [3, 5713, 5754], [0, 5755, 5755], [3, 5756, 5772], [9, 5773, 5781], [3, 5782, 5790], [7, 5791, 5793], [3, 5794, 5808], [7, 5809, 5810], [3, 5811, 5816], [7, 5817, 5824], [3, 5825, 5831], [7, 5832, 5866], [3, 5867, 5877], [7, 5878, 5878], [3, 5879, 5894], [7, 5895, 5921], [3, 5922, 5930], [7, 5931, 5939], [3, 5940, 5955], [7, 5956, 5957], [3, 5958, 5965], [7, 5966, 5968], [3, 5969, 5990], [7, 5991, 5992], [3, 5993, 6006], [7, 6007, 6022], [3, 6023, 6029], [7, 6030, 6063], [3, 6064, 6069], [7, 6070, 6075], [3, 6076, 6084], [0, 6085, 6085], [1, 6086, 6093], [4, 6094, 6094], [1, 6095, 6099], [0, 6100, 6100], [7, 6101, 6149], [3, 6150, 6160], [4, 6161, 6161], [0, 6162, 6162], [3, 6163, 6178], [7, 6179, 6181], [3, 6182, 6183], [9, 6184, 6200], [5, 6201, 6224], [9, 6225, 6225], [3, 6226, 6237], [7, 6238, 6239], [3, 6240, 6242], [7, 6243, 6249], [3, 6250, 6252], [7, 6253, 6255], [0, 6256, 6256], [3, 6257, 6264], [9, 6265, 6288], [3, 6289, 6291], [7, 6292, 6295], [3, 6296, 6337], [9, 6338, 6360], [3, 6361, 6366], [7, 6367, 6367], [3, 6368, 6370], [9, 6371, 6392], [3, 6393, 6393], [7, 6394, 6395], [3, 6396, 6407], [9, 6408, 6411], [3, 6412, 6419], [7, 6420, 6423], [3, 6424, 6424], [9, 6425, 6438], [3, 6439, 6444], [7, 6445, 6445], [3, 6446, 6461], [9, 6462, 6484], [3, 6485, 6518], [0, 6519, 6520], [3, 6521, 6533], [7, 6534, 6535], [3, 6536, 6575], [7, 6576, 6576], [3, 6577, 6585], [7, 6586, 6619], [0, 6620, 6630], [7, 6631, 6693], [3, 6694, 6721], [7, 6722, 6722], [3, 6723, 6762], [7, 6763, 6768], [3, 6769, 6785], [7, 6786, 6793], [3, 6794, 6796], [7, 6797, 6810], [3, 6811, 6825], [7, 6826, 6834], [3, 6835, 6841], [0, 6842, 6842], [3, 6843, 6865], [7, 6866, 6868], [3, 6869, 6872], [7, 6873, 6922], [4, 6923, 6923], [3, 6924, 6934], [7, 6935, 6938], [3, 6939, 6965], [7, 6966, 6974], [3, 6975, 6987], [7, 6988, 6988], [3, 6989, 7010], [7, 7011, 7019], [3, 7020, 7030], [7, 7031, 7031], [3, 7032, 7072], [7, 7073, 7078], [3, 7079, 7098], [7, 7099, 7105], [3, 7106, 7115], [7, 7116, 7132], [0, 7133, 7133], [3, 7134, 7139], [7, 7140, 7154], [3, 7155, 7179], [7, 7180, 7180], [3, 7181, 7190], [7, 7191, 7194], [4, 7195, 7414], [0, 7415, 7426], [4, 7427, 7513], [0, 7514, 7515], [6, 7516, 7617], [8, 7618, 7625], [6, 7626, 7647], [8, 7648, 7650], [6, 7651, 7668], [8, 7669, 7678], [6, 7679, 7695], [8, 7696, 7710], [6, 7711, 7740], [0, 7741, 7741], [6, 7742, 7789], [8, 7790, 7794], [6, 7795, 7799], [8, 7800, 7804], [4, 7805, 7810], [8, 7811, 7816], [6, 7817, 7840], [8, 7841, 7843], [6, 7844, 7867], [8, 7868, 7874], [6, 7875, 7912], [8, 7913, 7955], [1, 7956, 7959], [0, 7960, 7960], [6, 7961, 7972], [8, 7973, 7993], [6, 7994, 8076], [8, 8077, 8081], [5, 8082, 8087], [8, 8088, 8097], [6, 8098, 8114], [8, 8115, 8135], [6, 8136, 8151], [8, 8152, 8174], [6, 8175, 8205], [8, 8206, 8220], [6, 8221, 8246], [8, 8247, 8251], [6, 8252, 8263], [8, 8264, 8268], [6, 8269, 8309], [8, 8310, 8320], [6, 8321, 8352], [8, 8353, 8397], [6, 8398, 8411], [8, 8412, 8432], [6, 8433, 8457], [8, 8458, 8499], [0, 8500, 8500], [6, 8501, 8633], [8, 8634, 8635], [5, 8636, 8657], [8, 8658, 8660], [6, 8661, 8689], [9, 8690, 8693], [8, 8694, 8696], [6, 8697, 8717], [8, 8718, 8727], [6, 8728, 8750], [8, 8751, 8752], [6, 8753, 8754], [8, 8755, 8757], [5, 8758, 8776], [8, 8777, 8782], [6, 8783, 8806], [8, 8807, 8824], [6, 8825, 8836], [0, 8837, 8837], [6, 8838, 8850], [8, 8851, 8857], [6, 8858, 8875], [8, 8876, 8879], [6, 8880, 8886], [8, 8887, 8896], [6, 8897, 8903], [8, 8904, 8908], [6, 8909, 8912], [0, 8913, 8913], [9, 8914, 8925], [6, 8926, 8940], [8, 8941, 8944], [0, 8945, 8957], [6, 8958, 8959], [0, 8960, 8961], [6, 8962, 8978], [0, 8979, 8979], [6, 8980, 8991], [8, 8992, 8996], [6, 8997, 9060], [8, 9061, 9065], [6, 9066, 9116], [8, 9117, 9131], [6, 9132, 9140], [8, 9141, 9144], [6, 9145, 9162], [0, 9163, 9163], [6, 9164, 9202], [0, 9203, 9203], [6, 9204, 9237], [0, 9238, 9238], [6, 9239, 9284], [8, 9285, 9295], [6, 9296, 9301], [8, 9302, 9316], [6, 9317, 9351], [4, 9352, 9356], [0, 9357, 9357], [6, 9358, 9371], [8, 9372, 9393], [6, 9394, 9402], [0, 9403, 9403], [6, 9404, 9426], [8, 9427, 9429], [0, 9430, 9430], [8, 9431, 9438], [6, 9439, 9442], [0, 9443, 9445], [6, 9446, 9555], [0, 9556, 9557], [6, 9558, 9599], [8, 9600, 9611], [0, 9612, 9613], [8, 9614, 9621], [6, 9622, 9626], [8, 9627, 9631], [6, 9632, 9654], [0, 9655, 9655], [6, 9656, 9668], [0, 9669, 9669], [6, 9670, 9673], [8, 9674, 9686], [5, 9687, 9725], [8, 9726, 9726], [0, 9727, 9727], [8, 9728, 9729], [0, 9730, 9730], [1, 9731, 9731], [0, 9732, 9735], [8, 9736, 9760], [9, 9761, 9763], [8, 9764, 9769], [5, 9770, 9782], [8, 9783, 9792], [9, 9793, 9796], [8, 9797, 9822], [0, 9823, 9823], [8, 9824, 9827], [0, 9828, 9830], [8, 9831, 9859], [6, 9860, 9876], [8, 9877, 9889], [9, 9890, 9898], [0, 9899, 9900], [9, 9901, 9906]]



Result, n = 5, iter = 1000

hidden\_states 9937 [1 1 1 ... 4 4 4]

done

Transition matrix

[[9.69253842e-001 1.00057054e-002 3.84099626e-073 1.07361401e-003

1.96668389e-002]

[3.15130246e-003 9.84211250e-001 2.41632726e-004 6.95460770e-003

5.44120705e-003]

[1.36447497e-075 9.09090909e-003 9.90909091e-001 5.71261204e-102

3.00239277e-070]

[4.73419866e-003 2.68508310e-002 5.05839118e-102 9.49427936e-001

1.89870345e-002]

[6.03454901e-003 6.38141622e-003 2.86943099e-065 7.64461882e-003

9.79939416e-001]]

Means and vars of each hidden state

0th hidden state

mean = [-5.63767913]

var = [0.00125644]

1th hidden state

mean = [-5.48621626]

var = [0.00147555]

2th hidden state

mean = [-3.36100879]

var = [0.00170159]

3th hidden state

mean = [-4.84388781]

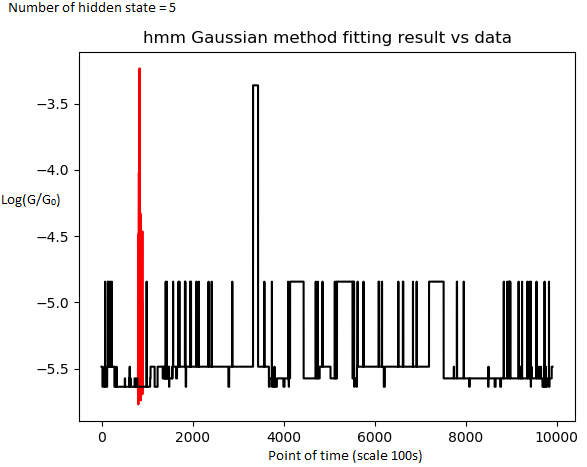
var = [0.09032678]

4th hidden state

mean = [-5.57454729]

var = [0.00055008]

[[1, 0, 19], [0, 20, 62], [1, 63, 68], [4, 69, 78], [3, 79, 79], [0, 80, 123], [1, 124, 138], [3, 139, 141], [1, 142, 164], [3, 165, 165], [1, 166, 190], [3, 191, 191], [1, 192, 226], [3, 227, 227], [1, 228, 282], [0, 283, 327], [1, 328, 328], [0, 329, 510], [4, 511, 517], [0, 518, 605], [4, 606, 618], [1, 619, 619], [0, 620, 627], [4, 628, 643], [0, 644, 725], [4, 726, 737], [0, 738, 768], [4, 769, 785], [0, 786, 990], [3, 991, 991], [1, 992, 992], [0, 993, 1067], [4, 1068, 1076], [1, 1077, 1166], [0, 1167, 1231], [1, 1232, 1343], [4, 1344, 1353], [1, 1354, 1363], [4, 1364, 1378], [1, 1379, 1382], [4, 1383, 1393], [1, 1394, 1394], [4, 1395, 1409], [3, 1410, 1410], [4, 1411, 1433], [3, 1434, 1435], [4, 1436, 1446], [1, 1447, 1447], [4, 1448, 1469], [1, 1470, 1482], [0, 1483, 1488], [4, 1489, 1546], [1, 1547, 1549], [4, 1550, 1561], [1, 1562, 1571], [3, 1572, 1572], [1, 1573, 1637], [4, 1638, 1658], [1, 1659, 1689], [3, 1690, 1692], [1, 1693, 1709], [3, 1710, 1710], [1, 1711, 1831], [3, 1832, 1833], [1, 1834, 1838], [3, 1839, 1840], [1, 1841, 1848], [0, 1849, 1858], [1, 1859, 1946], [3, 1947, 1948], [1, 1949, 1962], [3, 1963, 1966], [1, 1967, 2081], [3, 2082, 2089], [1, 2090, 2136], [3, 2137, 2137], [1, 2138, 2348], [3, 2349, 2351], [1, 2352, 2419], [3, 2420, 2420], [1, 2421, 2786], [0, 2787, 2803], [1, 2804, 2871], [3, 2872, 2872], [1, 2873, 3328], [2, 3329, 3438], [1, 3439, 3576], [3, 3577, 3577], [1, 3578, 3676], [0, 3677, 3693], [4, 3694, 3742], [3, 3743, 3743], [0, 3744, 3796], [1, 3797, 3799], [0, 3800, 3851], [4, 3852, 3994], [0, 3995, 4019], [4, 4020, 4097], [3, 4098, 4098], [4, 4099, 4113], [0, 4114, 4116], [4, 4117, 4142], [3, 4143, 4439], [4, 4440, 4705], [3, 4706, 4706], [4, 4707, 4753], [3, 4754, 4754], [4, 4755, 4792], [1, 4793, 4853], [3, 4854, 4854], [1, 4855, 5030], [4, 5031, 5124], [3, 5125, 5125], [4, 5126, 5153], [3, 5154, 5154], [4, 5155, 5172], [3, 5173, 5513], [4, 5514, 5528], [3, 5529, 5535], [4, 5536, 5546], [3, 5547, 5547], [4, 5548, 5551], [0, 5552, 5558], [4, 5559, 5604], [0, 5605, 5611], [1, 5612, 5623], [3, 5624, 5626], [1, 5627, 5754], [3, 5755, 5755], [1, 5756, 6084], [3, 6085, 6100], [1, 6101, 6160], [3, 6161, 6162], [1, 6163, 6200], [0, 6201, 6224], [1, 6225, 6519], [3, 6520, 6520], [1, 6521, 6619], [3, 6620, 6630], [1, 6631, 6841], [3, 6842, 6842], [1, 6843, 6922], [3, 6923, 6923], [1, 6924, 7194], [3, 7195, 7515], [4, 7516, 7739], [1, 7740, 7741], [4, 7742, 7804], [3, 7805, 7810], [4, 7811, 7955], [3, 7956, 7960], [4, 7961, 8076], [0, 8077, 8087], [4, 8088, 8492], [0, 8493, 8499], [1, 8500, 8500], [4, 8501, 8635], [0, 8636, 8657], [4, 8658, 8757], [0, 8758, 8776], [4, 8777, 8836], [3, 8837, 8837], [4, 8838, 8912], [3, 8913, 8913], [1, 8914, 8925], [4, 8926, 8944], [3, 8945, 8957], [1, 8958, 8960], [3, 8961, 8961], [4, 8962, 8978], [3, 8979, 8979], [4, 8980, 9162], [3, 9163, 9163], [4, 9164, 9202], [1, 9203, 9203], [4, 9204, 9237], [3, 9238, 9238], [4, 9239, 9351], [3, 9352, 9357], [4, 9358, 9402], [3, 9403, 9403], [4, 9404, 9429], [3, 9430, 9430], [0, 9431, 9434], [4, 9435, 9442], [1, 9443, 9445], [4, 9446, 9555], [3, 9556, 9556], [4, 9557, 9611], [1, 9612, 9613], [4, 9614, 9654], [1, 9655, 9655], [4, 9656, 9686], [0, 9687, 9726], [1, 9727, 9727], [0, 9728, 9729], [1, 9730, 9730], [3, 9731, 9735], [4, 9736, 9744], [0, 9745, 9760], [1, 9761, 9763], [0, 9764, 9786], [4, 9787, 9829], [3, 9830, 9830], [0, 9831, 9840], [4, 9841, 9889], [1, 9890, 9906]]



Result, n = 15, iter = 1000

hidden\_states 9937 [13 13 13 ... 8 8 8]

done

Transition matrix

[[2.47915445e-001 1.93663530e-038 1.22159928e-002 0.00000000e+000

2.23122454e-002 2.41303527e-078 6.37097835e-055 2.33142298e-001

1.17383466e-001 1.55563266e-001 3.14206799e-002 0.00000000e+000

8.59102667e-008 2.72201709e-002 1.52826350e-001]

[1.97684194e-149 9.83447859e-001 0.00000000e+000 0.00000000e+000

0.00000000e+000 1.83540350e-090 2.01135978e-003 1.96706038e-283

0.00000000e+000 0.00000000e+000 1.45407811e-002 0.00000000e+000

1.70890447e-243 3.69186802e-135 0.00000000e+000]

[6.39406005e-037 0.00000000e+000 9.33624109e-001 0.00000000e+000

5.95393360e-002 8.87032552e-292 7.06688008e-204 6.83655495e-003

1.38514133e-101 6.60650646e-051 1.05165694e-071 0.00000000e+000

4.30712510e-104 1.12721710e-035 9.22242090e-065]

[0.00000000e+000 0.00000000e+000 0.00000000e+000 9.90909091e-001

0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000

0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000

8.83661094e-072 9.09090909e-003 0.00000000e+000]

[1.36957315e-003 4.46199297e-191 1.05040055e-002 0.00000000e+000

9.08262203e-001 5.68482508e-083 4.04296237e-108 6.41038788e-003

1.79660816e-008 2.63096430e-003 1.47913024e-003 0.00000000e+000

5.98337864e-014 2.88424748e-007 6.93434292e-002]

[8.75038730e-018 2.79140970e-194 0.00000000e+000 0.00000000e+000

6.44377656e-125 9.61378202e-001 2.83786180e-085 1.62136916e-054

6.21652961e-003 5.79874738e-003 7.59643006e-003 1.57255511e-002

9.27133959e-043 4.48034745e-054 3.28453979e-003]

[2.12890542e-064 1.52285966e-121 4.10729048e-233 0.00000000e+000

3.85586954e-099 1.53408815e-076 7.62444893e-001 8.12054225e-054

9.24946417e-150 8.02833581e-171 6.83707265e-005 0.00000000e+000

2.17099120e-001 2.03876159e-002 1.79799474e-119]

[5.13711065e-002 1.07120079e-155 1.09975063e-115 0.00000000e+000

4.23554684e-003 3.96729265e-087 1.73327570e-043 8.55535212e-001

2.31789313e-014 7.27065387e-005 1.11306147e-008 0.00000000e+000

2.18877153e-002 6.68976365e-002 6.49646664e-008]

[6.89521451e-003 1.02061774e-046 2.01835271e-097 0.00000000e+000

2.12216753e-026 1.95548811e-003 9.16274812e-145 4.83071155e-015

8.95525085e-001 5.39865871e-002 1.12506640e-003 0.00000000e+000

8.30979355e-061 6.20289943e-097 4.05125585e-002]

[2.73688764e-002 2.81583385e-146 2.19148163e-226 0.00000000e+000

2.11392090e-053 1.55802652e-016 6.36822903e-173 1.53761545e-007

7.49906903e-002 8.95172323e-001 2.21516075e-004 0.00000000e+000

2.41133893e-054 7.23104050e-078 2.24644020e-003]

[7.05519069e-002 6.50613886e-002 7.15075700e-114 0.00000000e+000

3.20528806e-031 3.81192875e-002 1.40243736e-006 3.84597461e-002

1.26692372e-002 1.71052163e-002 4.55364647e-001 0.00000000e+000

9.26482763e-002 1.83565105e-001 2.64537864e-002]

[0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000

0.00000000e+000 1.76412556e-002 0.00000000e+000 0.00000000e+000

0.00000000e+000 0.00000000e+000 9.61826866e-239 9.82358744e-001

0.00000000e+000 0.00000000e+000 8.10090349e-228]

[1.39565127e-037 2.59545706e-162 5.89125071e-066 1.18309808e-290

2.35659509e-003 5.49586413e-043 5.28503054e-002 3.31135258e-019

4.75434305e-004 1.23781633e-026 7.21242610e-003 0.00000000e+000

8.07734932e-001 1.29370307e-001 2.51080105e-066]

[2.10346837e-016 3.53378185e-259 3.87638440e-096 7.40497262e-004

2.03173955e-011 1.73936795e-005 1.94621671e-003 5.07664091e-002

2.82178627e-053 1.09209487e-035 9.37916791e-003 0.00000000e+000

1.48892100e-001 7.88258215e-001 2.30435388e-086]

[2.88337735e-002 1.03073237e-003 1.58516827e-003 0.00000000e+000

4.63943649e-002 1.98356183e-003 1.16504920e-087 9.18508671e-016

6.23838005e-002 2.13122457e-003 4.53226091e-016 0.00000000e+000

2.13330119e-003 3.00474620e-029 8.53524073e-001]]

Means and vars of each hidden state

0th hidden state

mean = [-5.46878821]

var = [0.0078824]

1th hidden state

mean = [-4.45698236]

var = [0.00253427]

2th hidden state

mean = [-5.69273852]

var = [0.00077967]

3th hidden state

mean = [-3.36100879]

var = [0.00170159]

4th hidden state

mean = [-5.64079326]

var = [0.00054563]

5th hidden state

mean = [-5.1033274]

var = [0.01093581]

6th hidden state

mean = [-5.41693492]

var = [0.0014816]

7th hidden state

mean = [-5.52803083]

var = [0.00047904]

8th hidden state

mean = [-5.57798594]

var = [0.00028907]

9th hidden state

mean = [-5.55879719]

var = [0.00033149]

10th hidden state

mean = [-5.00799253]

var = [0.11056685]

11th hidden state

mean = [-4.89606694]

var = [0.00068208]

12th hidden state

mean = [-5.46900982]

var = [0.00059069]

13th hidden state

mean = [-5.50225882]

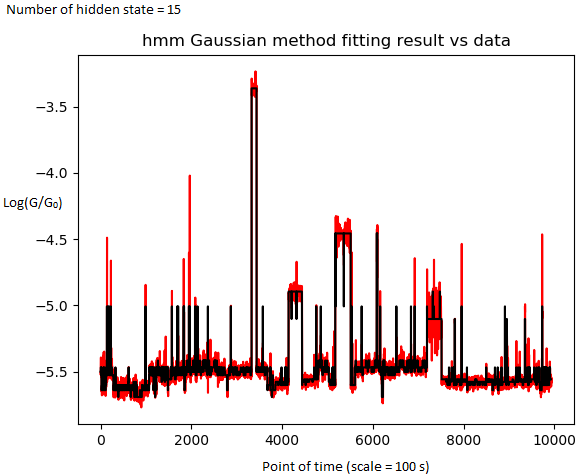
var = [0.00028073]

14th hidden state

mean = [-5.60236862]

var = [0.00047571]

[[13, 0, 5], [12, 6, 10], [13, 11, 11], [7, 12, 15], [12, 16, 19], [4, 20, 29], [14, 30, 38], [4, 39, 43], [14, 44, 57], [4, 58, 62], [7, 63, 64], [0, 65, 68], [14, 69, 78], [0, 79, 79], [4, 80, 87], [14, 88, 98], [4, 99, 113], [14, 114, 123], [12, 124, 127], [13, 128, 129], [7, 130, 133], [0, 134, 135], [7, 136, 138], [0, 139, 140], [10, 141, 141], [7, 142, 156], [12, 157, 157], [6, 158, 159], [12, 160, 161], [13, 162, 164], [10, 165, 165], [13, 166, 168], [12, 169, 169], [13, 170, 173], [12, 174, 174], [6, 175, 175], [12, 176, 190], [10, 191, 191], [0, 192, 195], [7, 196, 209], [13, 210, 210], [12, 211, 218], [13, 219, 224], [12, 225, 226], [10, 227, 227], [0, 228, 229], [7, 230, 232], [0, 233, 233], [7, 234, 235], [13, 236, 246], [12, 247, 253], [13, 254, 255], [7, 256, 282], [4, 283, 292], [14, 293, 300], [4, 301, 327], [0, 328, 328], [4, 329, 346], [14, 347, 350], [4, 351, 363], [14, 364, 381], [4, 382, 389], [2, 390, 393], [4, 394, 410], [14, 411, 414], [4, 415, 426], [14, 427, 430], [4, 431, 441], [14, 442, 453], [4, 454, 464], [14, 465, 467], [4, 468, 480], [14, 481, 483], [4, 484, 495], [14, 496, 500], [4, 501, 503], [14, 504, 517], [4, 518, 525], [14, 526, 530], [4, 531, 536], [14, 537, 547], [4, 548, 550], [14, 551, 566], [4, 567, 581], [14, 582, 600], [4, 601, 605], [14, 606, 606], [8, 607, 618], [0, 619, 619], [14, 620, 622], [4, 623, 627], [14, 628, 648], [4, 649, 665], [2, 666, 668], [4, 669, 684], [14, 685, 695], [4, 696, 724], [14, 725, 725], [8, 726, 737], [14, 738, 740], [4, 741, 741], [2, 742, 766], [4, 767, 768], [14, 769, 773], [8, 774, 783], [14, 784, 802], [2, 803, 865], [4, 866, 874], [2, 875, 909], [4, 910, 915], [14, 916, 917], [4, 918, 921], [14, 922, 935], [4, 936, 990], [10, 991, 991], [0, 992, 992], [4, 993, 1042], [14, 1043, 1052], [4, 1053, 1057], [14, 1058, 1060], [4, 1061, 1069], [7, 1070, 1076], [12, 1077, 1078], [13, 1079, 1085], [12, 1086, 1086], [13, 1087, 1090], [7, 1091, 1103], [13, 1104, 1104], [12, 1105, 1106], [13, 1107, 1113], [7, 1114, 1122], [0, 1123, 1124], [7, 1125, 1128], [0, 1129, 1129], [7, 1130, 1141], [0, 1142, 1142], [7, 1143, 1147], [12, 1148, 1149], [13, 1150, 1153], [7, 1154, 1159], [12, 1160, 1166], [4, 1167, 1168], [14, 1169, 1173], [4, 1174, 1198], [14, 1199, 1200], [0, 1201, 1201], [2, 1202, 1203], [4, 1204, 1215], [14, 1216, 1227], [4, 1228, 1229], [14, 1230, 1231], [12, 1232, 1240], [13, 1241, 1251], [12, 1252, 1253], [13, 1254, 1259], [12, 1260, 1262], [6, 1263, 1265], [12, 1266, 1266], [13, 1267, 1268], [12, 1269, 1269], [13, 1270, 1272], [7, 1273, 1278], [13, 1279, 1284], [12, 1285, 1288], [13, 1289, 1289], [7, 1290, 1303], [0, 1304, 1304], [7, 1305, 1342], [0, 1343, 1343], [8, 1344, 1353], [0, 1354, 1354], [7, 1355, 1356], [0, 1357, 1358], [7, 1359, 1380], [0, 1381, 1381], [9, 1382, 1393], [0, 1394, 1394], [9, 1395, 1409], [0, 1410, 1411], [8, 1412, 1423], [9, 1424, 1433], [0, 1434, 1435], [9, 1436, 1446], [0, 1447, 1447], [9, 1448, 1469], [0, 1470, 1470], [7, 1471, 1478], [13, 1479, 1481], [12, 1482, 1482], [4, 1483, 1488], [9, 1489, 1546], [0, 1547, 1548], [9, 1549, 1561], [0, 1562, 1562], [7, 1563, 1570], [0, 1571, 1571], [10, 1572, 1572], [7, 1573, 1579], [0, 1580, 1580], [7, 1581, 1584], [0, 1585, 1586], [7, 1587, 1593], [12, 1594, 1596], [13, 1597, 1610], [7, 1611, 1636], [0, 1637, 1637], [9, 1638, 1658], [0, 1659, 1659], [7, 1660, 1661], [0, 1662, 1664], [7, 1665, 1683], [0, 1684, 1684], [7, 1685, 1685], [13, 1686, 1689], [10, 1690, 1692], [13, 1693, 1696], [7, 1697, 1700], [13, 1701, 1709], [10, 1710, 1710], [13, 1711, 1714], [12, 1715, 1715], [13, 1716, 1721], [7, 1722, 1731], [13, 1732, 1755], [12, 1756, 1756], [13, 1757, 1761], [7, 1762, 1784], [12, 1785, 1791], [13, 1792, 1795], [12, 1796, 1800], [13, 1801, 1816], [12, 1817, 1819], [13, 1820, 1821], [7, 1822, 1830], [13, 1831, 1831], [10, 1832, 1833], [13, 1834, 1838], [10, 1839, 1840], [7, 1841, 1848], [4, 1849, 1858], [7, 1859, 1865], [0, 1866, 1866], [13, 1867, 1869], [12, 1870, 1871], [13, 1872, 1879], [12, 1880, 1885], [13, 1886, 1886], [7, 1887, 1890], [12, 1891, 1892], [13, 1893, 1896], [12, 1897, 1903], [13, 1904, 1907], [12, 1908, 1908], [13, 1909, 1911], [6, 1912, 1913], [12, 1914, 1914], [13, 1915, 1926], [12, 1927, 1933], [13, 1934, 1938], [12, 1939, 1939], [6, 1940, 1943], [12, 1944, 1946], [10, 1947, 1948], [13, 1949, 1951], [12, 1952, 1957], [6, 1958, 1961], [12, 1962, 1962], [10, 1963, 1966], [13, 1967, 1967], [12, 1968, 1979], [13, 1980, 1983], [7, 1984, 1989], [13, 1990, 2004], [12, 2005, 2008], [13, 2009, 2015], [12, 2016, 2021], [13, 2022, 2030], [12, 2031, 2034], [13, 2035, 2039], [12, 2040, 2040], [6, 2041, 2042], [12, 2043, 2047], [13, 2048, 2053], [12, 2054, 2054], [13, 2055, 2059], [12, 2060, 2060], [6, 2061, 2062], [12, 2063, 2070], [13, 2071, 2074], [12, 2075, 2075], [13, 2076, 2081], [10, 2082, 2089], [13, 2090, 2096], [7, 2097, 2117], [12, 2118, 2120], [6, 2121, 2121], [12, 2122, 2134], [13, 2135, 2136], [10, 2137, 2138], [13, 2139, 2146], [12, 2147, 2150], [6, 2151, 2151], [12, 2152, 2152], [13, 2153, 2159], [12, 2160, 2168], [13, 2169, 2179], [12, 2180, 2181], [13, 2182, 2185], [12, 2186, 2192], [6, 2193, 2195], [12, 2196, 2207], [13, 2208, 2210], [7, 2211, 2213], [12, 2214, 2238], [13, 2239, 2240], [12, 2241, 2262], [6, 2263, 2263], [13, 2264, 2266], [12, 2267, 2267], [6, 2268, 2271], [12, 2272, 2281], [6, 2282, 2289], [12, 2290, 2294], [6, 2295, 2298], [12, 2299, 2303], [6, 2304, 2305], [12, 2306, 2315], [6, 2316, 2323], [12, 2324, 2335], [13, 2336, 2338], [12, 2339, 2347], [6, 2348, 2353], [12, 2354, 2355], [13, 2356, 2356], [7, 2357, 2358], [12, 2359, 2361], [6, 2362, 2363], [13, 2364, 2365], [10, 2366, 2366], [12, 2367, 2367], [6, 2368, 2385], [12, 2386, 2387], [13, 2388, 2390], [12, 2391, 2392], [6, 2393, 2393], [13, 2394, 2397], [12, 2398, 2413], [13, 2414, 2415], [7, 2416, 2419], [0, 2420, 2422], [7, 2423, 2424], [13, 2425, 2429], [12, 2430, 2445], [13, 2446, 2448], [12, 2449, 2510], [6, 2511, 2514], [12, 2515, 2520], [6, 2521, 2522], [12, 2523, 2531], [6, 2532, 2533], [13, 2534, 2537], [12, 2538, 2561], [6, 2562, 2562], [12, 2563, 2565], [13, 2566, 2578], [7, 2579, 2585], [0, 2586, 2587], [7, 2588, 2591], [0, 2592, 2593], [7, 2594, 2599], [13, 2600, 2605], [12, 2606, 2606], [13, 2607, 2609], [12, 2610, 2610], [13, 2611, 2615], [12, 2616, 2619], [13, 2620, 2629], [12, 2630, 2630], [13, 2631, 2637], [7, 2638, 2652], [12, 2653, 2654], [13, 2655, 2667], [12, 2668, 2669], [13, 2670, 2670], [7, 2671, 2693], [12, 2694, 2696], [13, 2697, 2697], [7, 2698, 2700], [13, 2701, 2725], [12, 2726, 2729], [13, 2730, 2744], [7, 2745, 2786], [4, 2787, 2803], [7, 2804, 2837], [0, 2838, 2838], [7, 2839, 2858], [13, 2859, 2870], [10, 2871, 2872], [13, 2873, 2879], [12, 2880, 2883], [13, 2884, 2890], [12, 2891, 2896], [13, 2897, 2911], [12, 2912, 2916], [13, 2917, 2923], [7, 2924, 2936], [13, 2937, 2943], [12, 2944, 2951], [13, 2952, 2968], [12, 2969, 2972], [13, 2973, 2977], [12, 2978, 2978], [13, 2979, 2989], [7, 2990, 2995], [13, 2996, 3006], [12, 3007, 3008], [13, 3009, 3012], [7, 3013, 3030], [13, 3031, 3040], [7, 3041, 3045], [13, 3046, 3061], [7, 3062, 3065], [13, 3066, 3092], [12, 3093, 3093], [13, 3094, 3140], [12, 3141, 3141], [13, 3142, 3150], [12, 3151, 3151], [13, 3152, 3152], [7, 3153, 3169], [13, 3170, 3181], [7, 3182, 3195], [13, 3196, 3207], [12, 3208, 3211], [13, 3212, 3220], [12, 3221, 3237], [13, 3238, 3252], [12, 3253, 3257], [13, 3258, 3294], [12, 3295, 3295], [13, 3296, 3302], [7, 3303, 3317], [13, 3318, 3328], [3, 3329, 3438], [13, 3439, 3440], [12, 3441, 3446], [13, 3447, 3455], [12, 3456, 3471], [13, 3472, 3479], [12, 3480, 3481], [13, 3482, 3486], [12, 3487, 3493], [13, 3494, 3524], [12, 3525, 3533], [13, 3534, 3540], [12, 3541, 3547], [13, 3548, 3555], [12, 3556, 3569], [6, 3570, 3570], [12, 3571, 3576], [10, 3577, 3577], [13, 3578, 3581], [12, 3582, 3583], [13, 3584, 3590], [12, 3591, 3593], [13, 3594, 3608], [12, 3609, 3609], [13, 3610, 3617], [7, 3618, 3629], [12, 3630, 3634], [13, 3635, 3659], [12, 3660, 3669], [13, 3670, 3675], [12, 3676, 3676], [4, 3677, 3681], [14, 3682, 3735], [0, 3736, 3736], [14, 3737, 3742], [0, 3743, 3743], [14, 3744, 3744], [4, 3745, 3773], [2, 3774, 3779], [4, 3780, 3796], [7, 3797, 3799], [4, 3800, 3851], [14, 3852, 3861], [8, 3862, 3911], [14, 3912, 3926], [8, 3927, 3955], [9, 3956, 3967], [8, 3968, 3973], [14, 3974, 3988], [0, 3989, 3989], [14, 3990, 4031], [8, 4032, 4057], [14, 4058, 4066], [0, 4067, 4067], [14, 4068, 4076], [0, 4077, 4077], [8, 4078, 4097], [0, 4098, 4098], [8, 4099, 4112], [14, 4113, 4121], [8, 4122, 4142], [5, 4143, 4143], [11, 4144, 4210], [5, 4211, 4211], [11, 4212, 4318], [5, 4319, 4319], [11, 4320, 4438], [5, 4439, 4439], [14, 4440, 4443], [8, 4444, 4488], [9, 4489, 4515], [8, 4516, 4518], [14, 4519, 4524], [8, 4525, 4545], [9, 4546, 4564], [8, 4565, 4600], [9, 4601, 4667], [8, 4668, 4679], [9, 4680, 4705], [0, 4706, 4706], [9, 4707, 4752], [0, 4753, 4753], [10, 4754, 4754], [9, 4755, 4793], [0, 4794, 4794], [7, 4795, 4797], [13, 4798, 4798], [12, 4799, 4803], [6, 4804, 4846], [12, 4847, 4853], [10, 4854, 4854], [12, 4855, 4875], [6, 4876, 4876], [12, 4877, 4879], [6, 4880, 4884], [12, 4885, 4891], [13, 4892, 4893], [7, 4894, 4895], [0, 4896, 4896], [13, 4897, 4908], [12, 4909, 4914], [13, 4915, 4919], [12, 4920, 4939], [13, 4940, 4951], [12, 4952, 4952], [6, 4953, 4956], [12, 4957, 4976], [13, 4977, 4979], [12, 4980, 4991], [6, 4992, 4992], [12, 4993, 5001], [13, 5002, 5007], [12, 5008, 5010], [13, 5011, 5018], [12, 5019, 5030], [8, 5031, 5049], [9, 5050, 5055], [8, 5056, 5059], [14, 5060, 5085], [8, 5086, 5105], [14, 5106, 5111], [0, 5112, 5112], [8, 5113, 5124], [0, 5125, 5125], [8, 5126, 5139], [14, 5140, 5153], [0, 5154, 5154], [9, 5155, 5155], [8, 5156, 5169], [14, 5170, 5172], [1, 5173, 5177], [10, 5178, 5181], [1, 5182, 5361], [10, 5362, 5362], [1, 5363, 5512], [10, 5513, 5513], [14, 5514, 5521], [8, 5522, 5528], [5, 5529, 5531], [10, 5532, 5535], [14, 5536, 5546], [0, 5547, 5547], [14, 5548, 5611], [0, 5612, 5612], [13, 5613, 5619], [12, 5620, 5622], [6, 5623, 5626], [12, 5627, 5636], [13, 5637, 5641], [12, 5642, 5652], [13, 5653, 5658], [12, 5659, 5677], [13, 5678, 5684], [12, 5685, 5718], [13, 5719, 5723], [12, 5724, 5739], [13, 5740, 5754], [10, 5755, 5755], [13, 5756, 5763], [12, 5764, 5765], [13, 5766, 5772], [7, 5773, 5781], [13, 5782, 5782], [12, 5783, 5847], [6, 5848, 5852], [12, 5853, 5889], [13, 5890, 5893], [12, 5894, 5901], [6, 5902, 5911], [12, 5912, 5917], [6, 5918, 5920], [12, 5921, 5971], [13, 5972, 5982], [12, 5983, 5984], [13, 5985, 5988], [12, 5989, 5996], [13, 5997, 6002], [12, 6003, 6023], [13, 6024, 6029], [12, 6030, 6043], [6, 6044, 6052], [12, 6053, 6071], [6, 6072, 6075], [12, 6076, 6084], [10, 6085, 6085], [1, 6086, 6093], [10, 6094, 6094], [1, 6095, 6099], [10, 6100, 6100], [12, 6101, 6106], [6, 6107, 6116], [12, 6117, 6149], [13, 6150, 6151], [12, 6152, 6155], [13, 6156, 6159], [12, 6160, 6160], [10, 6161, 6162], [12, 6163, 6164], [13, 6165, 6170], [12, 6171, 6175], [13, 6176, 6178], [12, 6179, 6181], [13, 6182, 6186], [7, 6187, 6192], [0, 6193, 6193], [7, 6194, 6199], [0, 6200, 6200], [2, 6201, 6224], [7, 6225, 6225], [13, 6226, 6229], [12, 6230, 6231], [13, 6232, 6236], [12, 6237, 6237], [6, 6238, 6239], [12, 6240, 6242], [6, 6243, 6245], [12, 6246, 6252], [6, 6253, 6256], [12, 6257, 6263], [13, 6264, 6264], [7, 6265, 6267], [0, 6268, 6268], [7, 6269, 6282], [13, 6283, 6291], [12, 6292, 6300], [13, 6301, 6309], [12, 6310, 6320], [13, 6321, 6332], [12, 6333, 6337], [13, 6338, 6338], [7, 6339, 6357], [13, 6358, 6363], [12, 6364, 6367], [13, 6368, 6375], [7, 6376, 6387], [13, 6388, 6393], [12, 6394, 6398], [13, 6399, 6406], [12, 6407, 6407], [13, 6408, 6408], [7, 6409, 6411], [13, 6412, 6417], [12, 6418, 6423], [13, 6424, 6428], [7, 6429, 6438], [13, 6439, 6441], [12, 6442, 6454], [13, 6455, 6462], [7, 6463, 6470], [12, 6471, 6471], [13, 6472, 6478], [7, 6479, 6482], [13, 6483, 6493], [12, 6494, 6495], [13, 6496, 6506], [12, 6507, 6509], [13, 6510, 6518], [10, 6519, 6520], [13, 6521, 6525], [12, 6526, 6526], [13, 6527, 6533], [12, 6534, 6539], [13, 6540, 6547], [12, 6548, 6550], [13, 6551, 6566], [12, 6567, 6569], [13, 6570, 6575], [12, 6576, 6578], [13, 6579, 6583], [12, 6584, 6586], [6, 6587, 6605], [12, 6606, 6612], [6, 6613, 6643], [12, 6644, 6650], [6, 6651, 6676], [12, 6677, 6694], [13, 6695, 6709], [12, 6710, 6724], [13, 6725, 6741], [12, 6742, 6749], [13, 6750, 6753], [12, 6754, 6764], [6, 6765, 6765], [12, 6766, 6776], [13, 6777, 6781], [12, 6782, 6788], [6, 6789, 6793], [12, 6794, 6797], [6, 6798, 6799], [12, 6800, 6808], [6, 6809, 6810], [12, 6811, 6836], [13, 6837, 6841], [10, 6842, 6842], [13, 6843, 6851], [12, 6852, 6854], [13, 6855, 6860], [12, 6861, 6877], [6, 6878, 6881], [12, 6882, 6893], [6, 6894, 6906], [12, 6907, 6922], [10, 6923, 6923], [13, 6924, 6926], [12, 6927, 6970], [6, 6971, 6973], [12, 6974, 6987], [6, 6988, 6988], [12, 6989, 7000], [13, 7001, 7010], [12, 7011, 7047], [13, 7048, 7072], [12, 7073, 7098], [6, 7099, 7105], [12, 7106, 7132], [6, 7133, 7133], [12, 7134, 7147], [6, 7148, 7149], [12, 7150, 7165], [13, 7166, 7174], [12, 7175, 7190], [6, 7191, 7193], [12, 7194, 7194], [10, 7195, 7195], [5, 7196, 7319], [11, 7320, 7326], [5, 7327, 7346], [10, 7347, 7348], [5, 7349, 7476], [11, 7477, 7480], [5, 7481, 7515], [9, 7516, 7617], [8, 7618, 7625], [9, 7626, 7646], [8, 7647, 7647], [14, 7648, 7650], [8, 7651, 7668], [14, 7669, 7678], [0, 7679, 7680], [8, 7681, 7697], [14, 7698, 7699], [8, 7700, 7729], [9, 7730, 7740], [0, 7741, 7741], [9, 7742, 7778], [8, 7779, 7786], [0, 7787, 7787], [14, 7788, 7794], [0, 7795, 7795], [8, 7796, 7800], [14, 7801, 7804], [5, 7805, 7810], [8, 7811, 7840], [14, 7841, 7843], [8, 7844, 7845], [9, 7846, 7865], [8, 7866, 7888], [9, 7889, 7911], [8, 7912, 7917], [14, 7918, 7940], [8, 7941, 7949], [14, 7950, 7951], [8, 7952, 7955], [10, 7956, 7960], [8, 7961, 8001], [9, 8002, 8035], [8, 8036, 8073], [9, 8074, 8075], [0, 8076, 8076], [14, 8077, 8081], [4, 8082, 8087], [14, 8088, 8097], [8, 8098, 8132], [14, 8133, 8135], [8, 8136, 8152], [14, 8153, 8158], [8, 8159, 8205], [14, 8206, 8218], [8, 8219, 8246], [14, 8247, 8251], [8, 8252, 8254], [9, 8255, 8260], [8, 8261, 8270], [9, 8271, 8287], [8, 8288, 8310], [14, 8311, 8314], [8, 8315, 8355], [14, 8356, 8361], [8, 8362, 8417], [14, 8418, 8424], [8, 8425, 8469], [14, 8470, 8477], [8, 8478, 8492], [14, 8493, 8499], [0, 8500, 8500], [8, 8501, 8510], [9, 8511, 8536], [8, 8537, 8547], [9, 8548, 8558], [8, 8559, 8577], [9, 8578, 8588], [8, 8589, 8621], [9, 8622, 8631], [8, 8632, 8633], [14, 8634, 8635], [4, 8636, 8652], [14, 8653, 8658], [8, 8659, 8677], [9, 8678, 8691], [0, 8692, 8693], [14, 8694, 8696], [8, 8697, 8729], [9, 8730, 8747], [8, 8748, 8750], [14, 8751, 8752], [0, 8753, 8754], [14, 8755, 8757], [4, 8758, 8773], [14, 8774, 8776], [8, 8777, 8785], [9, 8786, 8804], [8, 8805, 8808], [14, 8809, 8823], [8, 8824, 8830], [9, 8831, 8836], [0, 8837, 8837], [8, 8838, 8850], [14, 8851, 8856], [8, 8857, 8912], [10, 8913, 8913], [7, 8914, 8916], [0, 8917, 8917], [7, 8918, 8924], [0, 8925, 8925], [9, 8926, 8932], [8, 8933, 8943], [14, 8944, 8944], [5, 8945, 8957], [9, 8958, 8959], [0, 8960, 8961], [8, 8962, 8978], [0, 8979, 8979], [8, 8980, 8992], [14, 8993, 8996], [8, 8997, 9081], [9, 9082, 9089], [8, 9090, 9128], [14, 9129, 9131], [8, 9132, 9145], [9, 9146, 9162], [0, 9163, 9163], [8, 9164, 9202], [0, 9203, 9203], [8, 9204, 9218], [9, 9219, 9237], [0, 9238, 9238], [9, 9239, 9264], [8, 9265, 9271], [9, 9272, 9282], [8, 9283, 9302], [14, 9303, 9316], [8, 9317, 9317], [9, 9318, 9343], [8, 9344, 9351], [5, 9352, 9357], [8, 9358, 9402], [0, 9403, 9403], [9, 9404, 9419], [8, 9420, 9426], [14, 9427, 9429], [0, 9430, 9430], [14, 9431, 9434], [8, 9435, 9442], [0, 9443, 9445], [8, 9446, 9452], [9, 9453, 9459], [0, 9460, 9460], [9, 9461, 9471], [8, 9472, 9493], [9, 9494, 9555], [0, 9556, 9557], [9, 9558, 9571], [8, 9572, 9603], [14, 9604, 9611], [0, 9612, 9613], [8, 9614, 9633], [9, 9634, 9641], [8, 9642, 9654], [0, 9655, 9655], [8, 9656, 9665], [9, 9666, 9668], [0, 9669, 9669], [8, 9670, 9675], [14, 9676, 9686], [4, 9687, 9723], [14, 9724, 9726], [0, 9727, 9727], [14, 9728, 9729], [0, 9730, 9730], [10, 9731, 9734], [0, 9735, 9735], [14, 9736, 9760], [0, 9761, 9761], [7, 9762, 9764], [0, 9765, 9766], [14, 9767, 9792], [0, 9793, 9793], [7, 9794, 9795], [0, 9796, 9796], [14, 9797, 9822], [0, 9823, 9823], [14, 9824, 9827], [0, 9828, 9830], [14, 9831, 9859], [8, 9860, 9862], [9, 9863, 9875], [8, 9876, 9879], [14, 9880, 9889], [0, 9890, 9890], [7, 9891, 9898], [0, 9899, 9900], [9, 9901, 9903], [0, 9904, 9906], [9, 9907, 9926]]



Result, n = 5, iter = 1000

hidden\_states 9937 [3 3 3 ... 0 0 0]

done

Transition matrix

[[9.79939416e-001 7.64461882e-003 2.86943098e-065 6.38141622e-003

6.03454901e-003]

[1.89870346e-002 9.49427936e-001 5.05839119e-102 2.68508310e-002

4.73419867e-003]

[3.00239277e-070 5.71261205e-102 9.90909091e-001 9.09090909e-003

1.36447495e-075]

[5.44120705e-003 6.95460770e-003 2.41632726e-004 9.84211250e-001

3.15130246e-003]

[1.96668389e-002 1.07361401e-003 3.84099619e-073 1.00057054e-002

9.69253842e-001]]

Means and vars of each hidden state

0th hidden state

mean = [-5.57454729]

var = [0.00055008]

1th hidden state

mean = [-4.84388781]

var = [0.09032678]

2th hidden state

mean = [-3.36100879]

var = [0.00170159]

3th hidden state

mean = [-5.48621626]

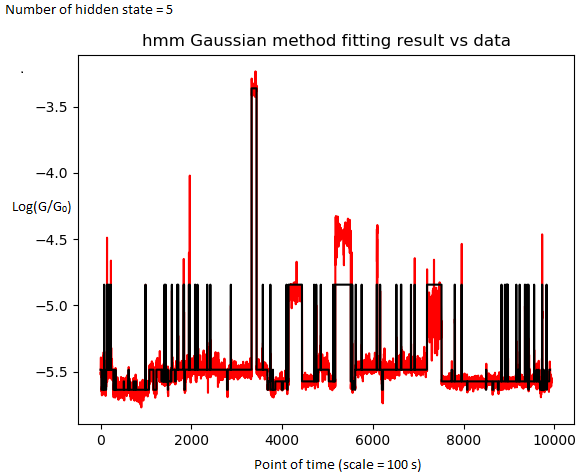
var = [0.00147555]

4th hidden state

mean = [-5.63767913]

var = [0.00125644]

[[3, 0, 19], [4, 20, 62], [3, 63, 68], [0, 69, 78], [1, 79, 79], [4, 80, 123], [3, 124, 138], [1, 139, 141], [3, 142, 164], [1, 165, 165], [3, 166, 190], [1, 191, 191], [3, 192, 226], [1, 227, 227], [3, 228, 282], [4, 283, 327], [3, 328, 328], [4, 329, 510], [0, 511, 517], [4, 518, 605], [0, 606, 618], [3, 619, 619], [4, 620, 627], [0, 628, 643], [4, 644, 725], [0, 726, 737], [4, 738, 768], [0, 769, 785], [4, 786, 990], [1, 991, 991], [3, 992, 992], [4, 993, 1067], [0, 1068, 1076], [3, 1077, 1166], [4, 1167, 1231], [3, 1232, 1343], [0, 1344, 1353], [3, 1354, 1363], [0, 1364, 1378], [3, 1379, 1382], [0, 1383, 1393], [3, 1394, 1394], [0, 1395, 1409], [1, 1410, 1410], [0, 1411, 1433], [1, 1434, 1435], [0, 1436, 1446], [3, 1447, 1447], [0, 1448, 1469], [3, 1470, 1482], [4, 1483, 1488], [0, 1489, 1546], [3, 1547, 1549], [0, 1550, 1561], [3, 1562, 1571], [1, 1572, 1572], [3, 1573, 1637], [0, 1638, 1658], [3, 1659, 1689], [1, 1690, 1692], [3, 1693, 1709], [1, 1710, 1710], [3, 1711, 1831], [1, 1832, 1833], [3, 1834, 1838], [1, 1839, 1840], [3, 1841, 1848], [4, 1849, 1858], [3, 1859, 1946], [1, 1947, 1948], [3, 1949, 1962], [1, 1963, 1966], [3, 1967, 2081], [1, 2082, 2089], [3, 2090, 2136], [1, 2137, 2137], [3, 2138, 2348], [1, 2349, 2351], [3, 2352, 2419], [1, 2420, 2420], [3, 2421, 2786], [4, 2787, 2803], [3, 2804, 2871], [1, 2872, 2872], [3, 2873, 3328], [2, 3329, 3438], [3, 3439, 3576], [1, 3577, 3577], [3, 3578, 3676], [4, 3677, 3693], [0, 3694, 3742], [1, 3743, 3743], [4, 3744, 3796], [3, 3797, 3799], [4, 3800, 3851], [0, 3852, 3994], [4, 3995, 4019], [0, 4020, 4097], [1, 4098, 4098], [0, 4099, 4113], [4, 4114, 4116], [0, 4117, 4142], [1, 4143, 4439], [0, 4440, 4705], [1, 4706, 4706], [0, 4707, 4753], [1, 4754, 4754], [0, 4755, 4792], [3, 4793, 4853], [1, 4854, 4854], [3, 4855, 5030], [0, 5031, 5124], [1, 5125, 5125], [0, 5126, 5153], [1, 5154, 5154], [0, 5155, 5172], [1, 5173, 5513], [0, 5514, 5528], [1, 5529, 5535], [0, 5536, 5546], [1, 5547, 5547], [0, 5548, 5551], [4, 5552, 5558], [0, 5559, 5604], [4, 5605, 5611], [3, 5612, 5623], [1, 5624, 5626], [3, 5627, 5754], [1, 5755, 5755], [3, 5756, 6084], [1, 6085, 6100], [3, 6101, 6160], [1, 6161, 6162], [3, 6163, 6200], [4, 6201, 6224], [3, 6225, 6519], [1, 6520, 6520], [3, 6521, 6619], [1, 6620, 6630], [3, 6631, 6841], [1, 6842, 6842], [3, 6843, 6922], [1, 6923, 6923], [3, 6924, 7194], [1, 7195, 7515], [0, 7516, 7739], [3, 7740, 7741], [0, 7742, 7804], [1, 7805, 7810], [0, 7811, 7955], [1, 7956, 7960], [0, 7961, 8076], [4, 8077, 8087], [0, 8088, 8492], [4, 8493, 8499], [3, 8500, 8500], [0, 8501, 8635], [4, 8636, 8657], [0, 8658, 8757], [4, 8758, 8776], [0, 8777, 8836], [1, 8837, 8837], [0, 8838, 8912], [1, 8913, 8913], [3, 8914, 8925], [0, 8926, 8944], [1, 8945, 8957], [3, 8958, 8960], [1, 8961, 8961], [0, 8962, 8978], [1, 8979, 8979], [0, 8980, 9162], [1, 9163, 9163], [0, 9164, 9202], [3, 9203, 9203], [0, 9204, 9237], [1, 9238, 9238], [0, 9239, 9351], [1, 9352, 9357], [0, 9358, 9402], [1, 9403, 9403], [0, 9404, 9429], [1, 9430, 9430], [4, 9431, 9434], [0, 9435, 9442], [3, 9443, 9445], [0, 9446, 9555], [1, 9556, 9556], [0, 9557, 9611], [3, 9612, 9613], [0, 9614, 9654], [3, 9655, 9655], [0, 9656, 9686], [4, 9687, 9726], [3, 9727, 9727], [4, 9728, 9729], [3, 9730, 9730], [1, 9731, 9735], [0, 9736, 9744], [4, 9745, 9760], [3, 9761, 9763], [4, 9764, 9786], [0, 9787, 9829], [1, 9830, 9830], [4, 9831, 9840], [0, 9841, 9889], [3, 9890, 9906]]



New Running Data

*"To call functions, tools from Library"*

from \_\_future\_\_ import print\_function

import datetime

import numpy as np

from matplotlib import cm, pyplot as plt

from matplotlib.dates import YearLocator, MonthLocator

try:

from matplotlib.finance import quotes\_historical\_yahoo\_ochl

except ImportError:

# For Matplotlib prior to 1.5.

from matplotlib.finance import (

quotes\_historical\_yahoo as quotes\_historical\_yahoo\_ochl

)

from hmmlearn.hmm import GaussianHMM

# print(\_\_doc\_\_)

*"Import data from excel file"*

from xlrd import open\_workbook

book = open\_workbook(*'Data2.xlsx'*)

sheet = book.sheet\_by\_index(0)

x = []

y = []

for k in range(1,sheet.nrows):

x.append(str(sheet.row\_values(k)[1-1]))

y.append(str(sheet.row\_values(k)[2-1]))

x = np.asarray(map(float, x))

y = np.asarray(map(float, y))

X = np.reshape(y,(-1,1))

*"Run Gaussian HMM"*

# Make an HMM instance and execute fit

n\_comp = 5

model = GaussianHMM(n\_components=n\_comp, covariance\_type=*"full"*, n\_iter=1000).fit(X)

# Predict the optimal sequence of internal hidden state

hidden\_states = model.predict(X)

print(*"done fitting to HMM"*)

*"Print All hidden state parameter"*

print(*"Transition matrix"*)

print(model.transmat\_)

print()

print(*"Means and Variance of each hidden state"*)

for i in range(model.n\_components):

print(*"{0}th hidden state"*.format(i))

print(*"mean = "*, model.means\_[i])

print(*"variance = "*, np.diag(model.covars\_[i]))

print()

*"Hidden state"*

result = []

test = hidden\_states[0]

for ind, i in enumerate(hidden\_states):

if n\_comp == 1 and ind == 0:

result.append([0,0,test])

if i != test:

if len(result) == 0:

result.append([0,ind-1,test])

else:

result.append([result[-1][1]+1,ind-1,test])

test = i

for i in range(0,len(result)):

result[i][0] = x[result[i][0]]

result[i][1] = x[result[i][1]]

result[i][2] = model.means\_[result[i][2]][0]

*"Print RESULT"*

print(*"Record of all hidden state"*)

print(*"\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*"*)

print(*"No."*,*" "*,*"TIME Start"*,*" - "*,*"TIME End"*,*" "*,*"VALUE"*)

for i in range(0,len(result)):

print(i, *" "*,result[i][0], *" - "*, result[i][1], *" "*, result[i][2])

*"Plot data and result"*

x\_plot = []

y\_plot = []

for i in result:

x\_plot.append(i[0])

x\_plot.append(i[1])

y\_plot.append(i[2])

y\_plot.append(i[2])

plt.figure(1)

plt.title(*"hmm Gaussian method fitting result vs data"*)

plt.plot(x,y, *'r'*)#, x,y, 'bo')

plt.plot(x\_plot, y\_plot, *'k'*)

plt.savefig(*"resultData2n5new"*)

plt.show()

n component = 5, n iter = 1000

done fitting to HMM

Transition matrix

[[9.69253842e-001 1.07361401e-003 3.84099618e-073 1.00057054e-002

1.96668389e-002]

[4.73419866e-003 9.49427936e-001 5.05839119e-102 2.68508310e-002

1.89870345e-002]

[1.36447495e-075 5.71261206e-102 9.90909091e-001 9.09090909e-003

3.00239279e-070]

[3.15130246e-003 6.95460770e-003 2.41632726e-004 9.84211250e-001

5.44120705e-003]

[6.03454901e-003 7.64461882e-003 2.86943100e-065 6.38141622e-003

9.79939416e-001]]

Means and Variance of each hidden state

0th hidden state

mean = [-5.63767913]

variance = [0.00125644]

1th hidden state

mean = [-4.84388781]

variance = [0.09032678]

2th hidden state

mean = [-3.36100879]

variance = [0.00170159]

3th hidden state

mean = [-5.48621626]

variance = [0.00147555]

4th hidden state

mean = [-5.57454729]

variance = [0.00055008]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 800.02031 - 800.21033 -5.48621625872

1 800.22033 - 800.64033 -5.63767913021

2 800.65033 - 800.70036 -5.48621625872

3 800.71033 - 800.83037 -5.57454728509

4 800.8746 - 800.8746 -4.84388781343

5 800.89957 - 801.33037 -5.63767913021

6 801.34035 - 801.48037 -5.48621625872

7 801.49032 - 801.51032 -4.84388781343

8 801.52037 - 801.77033 -5.48621625872

9 801.78031 - 801.78031 -4.84388781343

10 801.79037 - 802.06032 -5.48621625872

11 802.07036 - 802.07036 -4.84388781343

12 802.08037 - 802.42031 -5.48621625872

13 802.46327 - 802.46327 -4.84388781343

14 802.47033 - 803.01031 -5.48621625872

15 803.02031 - 803.49038 -5.63767913021

16 803.50038 - 803.50038 -5.48621625872

17 803.51038 - 805.32037 -5.63767913021

18 805.33033 - 805.39037 -5.57454728509

19 805.40037 - 806.30032 -5.63767913021

20 806.31037 - 806.43032 -5.57454728509

21 806.44117 - 806.44117 -5.48621625872

22 806.45037 - 806.52033 -5.63767913021

23 806.53036 - 806.68037 -5.57454728509

24 806.69118 - 807.50037 -5.63767913021

25 807.5106 - 807.62033 -5.57454728509

26 807.63036 - 807.93033 -5.63767913021

27 807.94031 - 808.10036 -5.57454728509

28 808.11037 - 810.15032 -5.63767913021

29 810.16033 - 810.16033 -4.84388781343

30 810.17033 - 810.17033 -5.48621625872

31 810.18037 - 810.96037 -5.63767913021

32 810.97033 - 811.05033 -5.57454728509

33 811.06033 - 811.95033 -5.48621625872

34 811.96033 - 812.60037 -5.63767913021

35 812.61037 - 813.72052 -5.48621625872

36 813.73037 - 813.82036 -5.57454728509

37 813.83037 - 813.92036 -5.48621625872

38 813.93033 - 814.07033 -5.57454728509

39 814.08032 - 814.11033 -5.48621625872

40 814.12031 - 814.22036 -5.57454728509

41 814.23033 - 814.23033 -5.48621625872

42 814.24036 - 814.38036 -5.57454728509

43 814.39038 - 814.39038 -4.84388781343

44 814.40036 - 814.62036 -5.57454728509

45 814.63033 - 814.64036 -4.84388781343

46 814.65033 - 814.75033 -5.57454728509

47 814.76037 - 814.76037 -5.48621625872

48 814.77033 - 814.98032 -5.57454728509

49 814.99033 - 815.11033 -5.48621625872

50 815.12032 - 815.17037 -5.63767913021

51 815.18032 - 815.75031 -5.57454728509

52 815.76031 - 815.78031 -5.48621625872

53 815.79037 - 815.90033 -5.57454728509

54 815.91036 - 816.00037 -5.48621625872

55 816.01032 - 816.01032 -4.84388781343

56 816.02032 - 816.66101 -5.48621625872

57 816.67032 - 816.87032 -5.57454728509

58 816.88032 - 817.18032 -5.48621625872

59 817.19032 - 817.21032 -4.84388781343

60 817.22036 - 817.38037 -5.48621625872

61 817.39036 - 817.39036 -4.84388781343

62 817.40033 - 818.60033 -5.48621625872

63 818.61036 - 818.62033 -4.84388781343

64 818.63032 - 818.67036 -5.48621625872

65 818.68033 - 818.69119 -4.84388781343

66 818.70037 - 818.77036 -5.48621625872

67 818.78037 - 818.87036 -5.63767913021

68 818.88033 - 819.79032 -5.48621625872

69 819.80151 - 819.81037 -4.84388781343

70 819.82037 - 819.95032 -5.48621625872

71 819.96032 - 820.03001 -4.84388781343

72 820.04033 - 821.18031 -5.48621625872

73 821.19041 - 821.26032 -4.84388781343

74 821.27032 - 821.73033 -5.48621625872

75 821.74032 - 821.74032 -4.84388781343

76 821.75037 - 823.85033 -5.48621625872

77 823.86037 - 823.88037 -4.84388781343

78 823.89036 - 824.56033 -5.48621625872

79 824.57041 - 824.57041 -4.84388781343

80 824.58033 - 828.23031 -5.48621625872

81 828.24093 - 828.40037 -5.63767913021

82 828.41037 - 829.08037 -5.48621625872

83 829.09037 - 829.09037 -4.84388781343

84 829.10037 - 833.65032 -5.48621625872

85 833.66315 - 834.87065 -3.36100878731

86 834.91271 - 836.28032 -5.48621625872

87 836.29037 - 836.29037 -4.84388781343

88 836.30032 - 837.28031 -5.48621625872

89 837.29035 - 837.45037 -5.63767913021

90 837.46032 - 837.94037 -5.57454728509

91 837.95037 - 837.95037 -4.84388781343

92 837.96037 - 838.48033 -5.63767913021

93 838.49032 - 838.5117 -5.48621625872

94 838.52047 - 839.03037 -5.63767913021

95 839.04032 - 840.46032 -5.57454728509

96 840.47037 - 840.71037 -5.63767913021

97 840.72036 - 841.49033 -5.57454728509

98 841.50032 - 841.50032 -4.84388781343

99 841.51037 - 841.65037 -5.57454728509

100 841.66108 - 841.68037 -5.63767913021

101 841.6904 - 841.9404 -5.57454728509

102 841.95032 - 844.91115 -4.84388781343

103 844.92031 - 847.57032 -5.57454728509

104 847.58033 - 847.58033 -4.84388781343

105 847.59036 - 848.05168 -5.57454728509

106 848.06032 - 848.06032 -4.84388781343

107 848.07033 - 848.44037 -5.57454728509

108 848.45033 - 849.05037 -5.48621625872

109 849.06032 - 849.06032 -4.84388781343

110 849.07033 - 850.82036 -5.48621625872

111 850.83036 - 851.76037 -5.57454728509

112 851.77036 - 851.77036 -4.84388781343

113 851.78032 - 852.05166 -5.57454728509

114 852.06037 - 852.06037 -4.84388781343

115 852.07037 - 852.24057 -5.57454728509

116 852.25037 - 855.77077 -4.84388781343

117 855.78037 - 855.92033 -5.57454728509

118 855.93033 - 855.99037 -4.84388781343

119 856.00031 - 856.10045 -5.57454728509

120 856.11033 - 856.11033 -4.84388781343

121 856.12031 - 856.15037 -5.57454728509

122 856.16033 - 856.22037 -5.63767913021

123 856.23032 - 856.68032 -5.57454728509

124 856.69044 - 856.75033 -5.63767913021

125 856.76037 - 856.87033 -5.48621625872

126 856.88032 - 856.90036 -4.84388781343

127 856.91033 - 858.18036 -5.48621625872

128 858.19033 - 858.19033 -4.84388781343

129 858.20032 - 861.48031 -5.48621625872

130 861.49033 - 861.64037 -4.84388781343

131 861.65032 - 862.24032 -5.48621625872

132 862.25033 - 862.26032 -4.84388781343

133 862.27037 - 862.64032 -5.48621625872

134 862.65033 - 862.88031 -5.63767913021

135 862.89037 - 865.83046 -5.48621625872

136 865.84037 - 865.84037 -4.84388781343

137 865.85041 - 866.83056 -5.48621625872

138 866.84037 - 866.94037 -4.84388781343

139 866.95032 - 869.05176 -5.48621625872

140 869.06031 - 869.06031 -4.84388781343

141 869.07032 - 869.86033 -5.48621625872

142 869.87037 - 869.87037 -4.84388781343

143 869.88037 - 872.58056 -5.48621625872

144 872.59037 - 875.79032 -4.84388781343

145 875.80037 - 878.03036 -5.57454728509

146 878.04032 - 878.05036 -5.48621625872

147 878.06036 - 878.68033 -5.57454728509

148 878.69039 - 878.74033 -4.84388781343

149 878.75031 - 880.19037 -5.57454728509

150 880.20032 - 880.24036 -4.84388781343

151 880.25037 - 881.40037 -5.57454728509

152 881.4113 - 881.51037 -5.63767913021

153 881.52081 - 885.56037 -5.57454728509

154 885.57032 - 885.63037 -5.63767913021

155 885.64037 - 885.64037 -5.48621625872

156 885.65032 - 886.99055 -5.57454728509

157 887.00032 - 887.21037 -5.63767913021

158 887.22032 - 888.21032 -5.57454728509

159 888.22037 - 888.40032 -5.63767913021

160 888.41145 - 889.00036 -5.57454728509

161 889.01037 - 889.01037 -4.84388781343

162 889.02086 - 889.76032 -5.57454728509

163 889.77037 - 889.77037 -4.84388781343

164 889.78037 - 889.89032 -5.48621625872

165 889.90032 - 890.08037 -5.57454728509

166 890.09037 - 890.21037 -4.84388781343

167 890.22032 - 890.24037 -5.48621625872

168 890.25032 - 890.25032 -4.84388781343

169 890.26033 - 890.42032 -5.57454728509

170 890.43037 - 890.43037 -4.84388781343

171 890.44032 - 892.26032 -5.57454728509

172 892.27037 - 892.27037 -4.84388781343

173 892.28037 - 892.66037 -5.57454728509

174 892.67037 - 892.67037 -5.48621625872

175 892.68037 - 893.01032 -5.57454728509

176 893.02032 - 893.02032 -4.84388781343

177 893.03037 - 894.15033 -5.57454728509

178 894.16037 - 894.21033 -4.84388781343

179 894.22037 - 894.66141 -5.57454728509

180 894.67031 - 894.67031 -4.84388781343

181 894.68033 - 894.93033 -5.57454728509

182 894.94037 - 894.94037 -4.84388781343

183 894.95032 - 894.98032 -5.63767913021

184 894.99048 - 895.06037 -5.57454728509

185 895.07033 - 895.09037 -5.48621625872

186 895.10032 - 896.19037 -5.57454728509

187 896.20032 - 896.20032 -4.84388781343

188 896.21037 - 896.75032 -5.57454728509

189 896.76037 - 896.77032 -5.48621625872

190 896.78036 - 897.18037 -5.57454728509

191 897.19045 - 897.19045 -5.48621625872

192 897.20032 - 897.50031 -5.57454728509

193 897.51033 - 897.90036 -5.63767913021

194 897.91037 - 897.91037 -5.48621625872

195 897.92032 - 897.93032 -5.63767913021

196 897.94039 - 897.94039 -5.48621625872

197 897.95037 - 897.99032 -4.84388781343

198 898.00033 - 898.08037 -5.57454728509

199 898.09037 - 898.24037 -5.63767913021

200 898.25032 - 898.27036 -5.48621625872

201 898.28033 - 898.50037 -5.63767913021

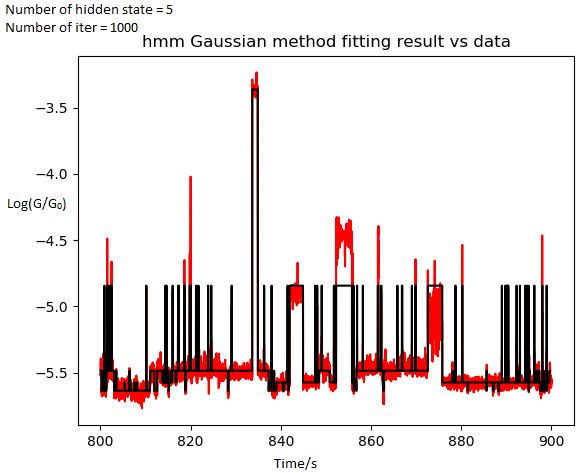
202 898.51036 - 898.93032 -5.57454728509

203 898.94043 - 898.94043 -4.84388781343

204 898.95032 - 899.04037 -5.63767913021

205 899.05037 - 899.53037 -5.57454728509

206 899.54037 - 899.70032 -5.48621625872



n component = 10, n iter = 1000

done fitting to HMM

Transition matrix

[[8.97694317e-001 1.14818034e-003 0.00000000e+000 1.56314423e-003

3.36395200e-003 3.10939790e-004 1.71163618e-002 6.53019145e-002

1.45294397e-024 1.35011908e-002]

[0.00000000e+000 9.77381162e-001 0.00000000e+000 9.07929314e-003

8.47180681e-027 2.51299675e-138 0.00000000e+000 0.00000000e+000

2.40425335e-038 1.35395453e-002]

[0.00000000e+000 0.00000000e+000 9.90909091e-001 0.00000000e+000

2.33444278e-302 8.62664334e-123 0.00000000e+000 0.00000000e+000

9.09090909e-003 1.90860552e-263]

[4.40137477e-003 3.48891049e-003 0.00000000e+000 9.74005132e-001

1.55109129e-015 3.08159772e-026 1.86905054e-164 4.88955132e-016

3.97521059e-003 1.41293726e-002]

[3.50689293e-003 6.60570443e-067 4.70904921e-194 1.31750725e-015

8.98222299e-001 2.33905220e-007 4.78646948e-003 8.65690390e-003

6.60740531e-002 1.87531473e-002]

[4.11508615e-095 7.73967830e-150 2.38017616e-232 2.35365719e-003

1.32508503e-032 8.27612973e-001 1.55205400e-055 2.29626339e-084

1.62174950e-001 7.85841995e-003]

[2.70790140e-002 2.51338271e-241 0.00000000e+000 9.56883543e-004

6.10836603e-003 2.79589304e-050 9.62323204e-001 9.19642885e-004

2.58212546e-003 3.07637930e-005]

[4.30768200e-002 6.47584232e-005 0.00000000e+000 9.65627291e-004

3.98381593e-003 1.84057833e-064 3.26450540e-059 9.39360164e-001

1.62740077e-038 1.25488148e-002]

[5.47008757e-063 2.20048432e-121 4.98747934e-004 2.24523801e-003

3.66155732e-002 8.15040088e-002 2.75631321e-003 4.48685899e-015

8.66337628e-001 1.00424913e-002]

[8.48170789e-002 2.05491179e-002 2.42719440e-242 7.20560636e-003

1.07603297e-001 3.87047228e-002 1.61793132e-002 1.41471717e-001

1.28139246e-001 4.55329900e-001]]

Means and Variance of each hidden state

0th hidden state

mean = [-5.59510599]

variance = [0.00044845]

1th hidden state

mean = [-4.45951835]

variance = [0.00293939]

2th hidden state

mean = [-3.36100879]

variance = [0.00170159]

3th hidden state

mean = [-4.98601329]

variance = [0.01774515]

4th hidden state

mean = [-5.52267676]

variance = [0.00051637]

5th hidden state

mean = [-5.44509915]

variance = [0.00105534]

6th hidden state

mean = [-5.64500971]

variance = [0.00114556]

7th hidden state

mean = [-5.56630695]

variance = [0.00034127]

8th hidden state

mean = [-5.48937225]

variance = [0.00046593]

9th hidden state

mean = [-5.371557]

variance = [0.01668811]

[[800.02031, 800.07038, -5.489372246791457], [800.08045, 800.12038, -5.44509915452271], [800.13038, 800.13038, -5.489372246791457], [800.14033, 800.17033, -5.522676758081886], [800.18038, 800.18038, -5.3715569956845455], [800.19033, 800.21033, -5.489372246791457], [800.22033, 800.64033, -5.645009712056904], [800.65033, 800.66116, -5.522676758081886], [800.67033, 800.70036, -5.3715569956845455], [800.71033, 800.83037, -5.595105993287004], [800.8746, 800.8746, -5.3715569956845455], [800.89957, 801.23033, -5.645009712056904], [801.24032, 801.33037, -5.595105993287004], [801.34035, 801.37036, -5.44509915452271], [801.38098, 801.39037, -5.489372246791457], [801.40032, 801.43037, -5.522676758081886], [801.44037, 801.45032, -5.3715569956845455], [801.46037, 801.48037, -5.522676758081886], [801.49032, 801.50037, -5.3715569956845455], [801.51032, 801.51032, -4.459518353530754], [801.52037, 801.52037, -5.3715569956845455], [801.53032, 801.66033, -5.522676758081886], [801.67037, 801.67037, -5.489372246791457], [801.68033, 801.69789, -5.44509915452271], [801.72954, 801.77033, -5.489372246791457], [801.78031, 801.78031, -5.3715569956845455], [801.79037, 801.87038, -5.489372246791457], [801.88033, 801.88033, -5.44509915452271], [801.89033, 801.93037, -5.489372246791457], [801.94038, 802.00189, -5.44509915452271], [802.01037, 802.06032, -5.489372246791457], [802.07036, 802.11032, -5.3715569956845455], [802.12032, 802.25037, -5.522676758081886], [802.26037, 802.31037, -5.489372246791457], [802.32032, 802.32032, -5.44509915452271], [802.33037, 802.42031, -5.489372246791457], [802.46327, 802.46327, -4.986013293184129], [802.47033, 802.48033, -5.3715569956845455], [802.49037, 802.51033, -5.522676758081886], [802.52037, 802.52037, -5.3715569956845455], [802.53037, 802.59032, -5.522676758081886], [802.60036, 802.65037, -5.489372246791457], [802.66037, 802.71037, -5.44509915452271], [802.72033, 802.72033, -5.489372246791457], [802.73037, 803.01031, -5.522676758081886], [803.02031, 803.49038, -5.645009712056904], [803.50038, 803.50038, -5.489372246791457], [803.51038, 803.85038, -5.645009712056904], [803.86033, 804.03038, -5.595105993287004], [804.04038, 804.63038, -5.645009712056904], [804.64032, 804.75033, -5.595105993287004], [804.76032, 805.25037, -5.645009712056904], [805.26032, 805.39037, -5.595105993287004], [805.40037, 805.77033, -5.645009712056904], [805.78036, 805.91092, -5.595105993287004], [805.92031, 806.06036, -5.645009712056904], [806.07038, 806.18037, -5.595105993287004], [806.19117, 806.30032, -5.645009712056904], [806.31037, 806.36037, -5.595105993287004], [806.37032, 806.43032, -5.566306948433779], [806.44117, 806.44117, -5.3715569956845455], [806.45037, 806.47048, -5.595105993287004], [806.48037, 806.52033, -5.645009712056904], [806.53036, 806.73032, -5.595105993287004], [806.74037, 807.49033, -5.645009712056904], [807.50037, 807.50037, -5.595105993287004], [807.5106, 807.62033, -5.566306948433779], [807.63036, 807.65036, -5.595105993287004], [807.66106, 807.93033, -5.645009712056904], [807.94031, 808.27038, -5.595105993287004], [808.28036, 810.15032, -5.645009712056904], [810.16033, 810.16033, -4.986013293184129], [810.17033, 810.17033, -5.3715569956845455], [810.18037, 810.98037, -5.645009712056904], [810.99037, 811.01037, -5.522676758081886], [811.02037, 811.05033, -5.566306948433779], [811.06033, 811.06033, -5.3715569956845455], [811.07033, 811.19122, -5.489372246791457], [811.20032, 811.33032, -5.522676758081886], [811.34037, 811.42032, -5.489372246791457], [811.43033, 811.51037, -5.522676758081886], [811.52037, 811.53037, -5.489372246791457], [811.54033, 811.57033, -5.522676758081886], [811.58037, 811.58037, -5.3715569956845455], [811.59037, 811.76032, -5.522676758081886], [811.77037, 811.82037, -5.489372246791457], [811.83048, 811.88033, -5.522676758081886], [811.89033, 811.95033, -5.489372246791457], [811.96033, 812.29037, -5.645009712056904], [812.30149, 812.30149, -5.489372246791457], [812.31036, 812.60037, -5.645009712056904], [812.61037, 812.63052, -5.489372246791457], [812.64037, 812.64037, -5.44509915452271], [812.65032, 812.80037, -5.489372246791457], [812.81033, 812.81033, -5.44509915452271], [812.82032, 812.90033, -5.489372246791457], [812.91037, 812.94033, -5.44509915452271], [812.95032, 812.99032, -5.489372246791457], [813.00037, 813.07036, -5.522676758081886], [813.08037, 813.17031, -5.489372246791457], [813.18037, 813.32037, -5.522676758081886], [813.33032, 813.33032, -5.3715569956845455], [813.34032, 813.72052, -5.522676758081886], [813.73037, 813.82036, -5.566306948433779], [813.83037, 814.11033, -5.522676758081886], [814.12031, 814.22036, -5.566306948433779], [814.23033, 814.23033, -5.3715569956845455], [814.24036, 814.38036, -5.566306948433779], [814.39038, 814.40036, -5.3715569956845455], [814.41096, 814.62036, -5.566306948433779], [814.63033, 814.64036, -5.3715569956845455], [814.65033, 814.75033, -5.566306948433779], [814.76037, 814.76037, -5.3715569956845455], [814.77033, 814.87033, -5.566306948433779], [814.88032, 815.07038, -5.522676758081886], [815.08042, 815.11033, -5.489372246791457], [815.12032, 815.17037, -5.645009712056904], [815.18032, 815.18032, -5.595105993287004], [815.19037, 815.75031, -5.566306948433779], [815.76031, 815.77035, -5.3715569956845455], [815.78031, 815.90033, -5.566306948433779], [815.91036, 815.99036, -5.522676758081886], [816.00037, 816.01032, -5.3715569956845455], [816.02032, 816.08032, -5.522676758081886], [816.09032, 816.09032, -5.3715569956845455], [816.10037, 816.13033, -5.522676758081886], [816.14032, 816.15032, -5.489372246791457], [816.161, 816.22053, -5.522676758081886], [816.23033, 816.39032, -5.489372246791457], [816.40032, 816.78035, -5.522676758081886], [816.79036, 816.82036, -5.566306948433779], [816.83056, 816.92037, -5.522676758081886], [816.93032, 816.93032, -5.3715569956845455], [816.94032, 817.11032, -5.522676758081886], [817.12032, 817.12032, -5.489372246791457], [817.13032, 817.13032, -5.44509915452271], [817.14032, 817.18032, -5.489372246791457], [817.19032, 817.21032, -5.3715569956845455], [817.22036, 817.25032, -5.489372246791457], [817.26037, 817.31032, -5.522676758081886], [817.32033, 817.38037, -5.489372246791457], [817.39036, 817.39036, -5.3715569956845455], [817.40033, 817.48033, -5.489372246791457], [817.49037, 817.61033, -5.522676758081886], [817.62037, 817.90037, -5.489372246791457], [817.91032, 818.13037, -5.522676758081886], [818.14036, 818.16032, -5.489372246791457], [818.17037, 818.17037, -5.44509915452271], [818.18032, 818.27033, -5.489372246791457], [818.28032, 818.29038, -5.44509915452271], [818.30036, 818.30036, -5.489372246791457], [818.31037, 818.40032, -5.522676758081886], [818.41098, 818.45033, -5.489372246791457], [818.46032, 818.48036, -5.44509915452271], [818.49038, 818.49038, -5.489372246791457], [818.50032, 818.59036, -5.522676758081886], [818.60033, 818.60033, -5.489372246791457], [818.61036, 818.61036, -4.986013293184129], [818.62033, 818.62033, -5.3715569956845455], [818.63032, 818.67036, -5.522676758081886], [818.68033, 818.69119, -5.3715569956845455], [818.70037, 818.77036, -5.522676758081886], [818.78037, 818.87036, -5.645009712056904], [818.88033, 818.98033, -5.522676758081886], [818.99033, 818.99033, -5.3715569956845455], [819.00033, 819.14036, -5.489372246791457], [819.15037, 819.15037, -5.44509915452271], [819.16102, 819.18037, -5.489372246791457], [819.19037, 819.23032, -5.522676758081886], [819.24037, 819.29032, -5.489372246791457], [819.30037, 819.30037, -5.44509915452271], [819.31032, 819.44042, -5.489372246791457], [819.45032, 819.46033, -5.44509915452271], [819.47037, 819.61032, -5.489372246791457], [819.62038, 819.62038, -5.44509915452271], [819.63032, 819.72033, -5.489372246791457], [819.73032, 819.76033, -5.44509915452271], [819.77035, 819.79032, -5.489372246791457], [819.80151, 819.81037, -4.986013293184129], [819.82037, 819.89033, -5.489372246791457], [819.90032, 819.94043, -5.44509915452271], [819.95032, 819.95032, -5.489372246791457], [819.96032, 819.96032, -5.3715569956845455], [819.97052, 819.97052, -4.459518353530754], [820.00478, 820.03001, -4.986013293184129], [820.04033, 820.16102, -5.489372246791457], [820.17037, 820.34033, -5.522676758081886], [820.35032, 820.43033, -5.489372246791457], [820.44041, 820.45033, -5.44509915452271], [820.46038, 820.77033, -5.489372246791457], [820.78037, 820.84033, -5.44509915452271], [820.85033, 820.96037, -5.489372246791457], [820.97048, 821.07037, -5.44509915452271], [821.08033, 821.18031, -5.489372246791457], [821.19041, 821.25037, -4.986013293184129], [821.26032, 821.26032, -5.3715569956845455], [821.27032, 821.32037, -5.489372246791457], [821.33037, 821.54033, -5.522676758081886], [821.55033, 821.55033, -5.3715569956845455], [821.56033, 821.57033, -5.489372246791457], [821.58037, 821.58037, -5.44509915452271], [821.59033, 821.73033, -5.489372246791457], [821.74032, 821.75037, -5.3715569956845455], [821.76037, 821.87037, -5.489372246791457], [821.88031, 821.88031, -5.3715569956845455], [821.89033, 822.29038, -5.489372246791457], [822.30033, 822.32033, -5.44509915452271], [822.33033, 822.86033, -5.489372246791457], [822.87033, 822.94041, -5.44509915452271], [822.95036, 822.99037, -5.489372246791457], [823.00037, 823.00037, -5.44509915452271], [823.01037, 823.03037, -5.489372246791457], [823.04032, 823.10033, -5.44509915452271], [823.11033, 823.18041, -5.489372246791457], [823.19041, 823.72037, -5.44509915452271], [823.73033, 823.75033, -5.489372246791457], [823.76033, 823.85033, -5.44509915452271], [823.86037, 823.88037, -5.3715569956845455], [823.89036, 823.90031, -5.44509915452271], [823.91097, 823.98031, -5.489372246791457], [823.99031, 824.00035, -5.44509915452271], [824.01036, 824.02031, -5.489372246791457], [824.03036, 824.07031, -5.3715569956845455], [824.08033, 824.24037, -5.44509915452271], [824.25037, 824.27037, -5.489372246791457], [824.28037, 824.30033, -5.44509915452271], [824.31033, 824.36037, -5.489372246791457], [824.37037, 824.50037, -5.44509915452271], [824.51037, 824.52033, -5.489372246791457], [824.53033, 824.56033, -5.522676758081886], [824.57041, 824.59033, -5.3715569956845455], [824.60033, 824.62037, -5.522676758081886], [824.63037, 824.67037, -5.489372246791457], [824.68037, 824.68037, -5.44509915452271], [824.69041, 824.85037, -5.489372246791457], [824.86037, 825.22037, -5.44509915452271], [825.23037, 825.42036, -5.489372246791457], [825.43032, 825.51037, -5.44509915452271], [825.52037, 825.57037, -5.489372246791457], [825.58037, 825.64037, -5.44509915452271], [825.65056, 825.68032, -5.489372246791457], [825.69045, 825.70037, -5.44509915452271], [825.71032, 825.82037, -5.489372246791457], [825.83032, 826.00032, -5.44509915452271], [826.01032, 826.15037, -5.489372246791457], [826.16099, 826.22037, -5.522676758081886], [826.23037, 826.23037, -5.3715569956845455], [826.24032, 826.28037, -5.489372246791457], [826.29037, 826.30032, -5.3715569956845455], [826.31032, 826.36032, -5.522676758081886], [826.37032, 826.42032, -5.489372246791457], [826.43037, 826.43037, -5.44509915452271], [826.44041, 826.56037, -5.489372246791457], [826.57032, 826.89032, -5.522676758081886], [826.90032, 826.92036, -5.489372246791457], [826.93032, 827.01032, -5.522676758081886], [827.02037, 827.06037, -5.489372246791457], [827.07032, 827.30156, -5.522676758081886], [827.31032, 827.33043, -5.489372246791457], [827.34037, 827.52032, -5.522676758081886], [827.53032, 827.64037, -5.489372246791457], [827.65037, 827.65037, -5.44509915452271], [827.66032, 827.8016, -5.489372246791457], [827.81036, 828.23031, -5.522676758081886], [828.24093, 828.40037, -5.645009712056904], [828.41037, 829.07032, -5.522676758081886], [829.08037, 829.09037, -5.3715569956845455], [829.10037, 829.16103, -5.489372246791457], [829.17031, 829.19037, -5.44509915452271], [829.20037, 829.60033, -5.489372246791457], [829.61031, 829.73037, -5.522676758081886], [829.74037, 829.80033, -5.489372246791457], [829.81033, 829.81033, -5.44509915452271], [829.82033, 830.05033, -5.489372246791457], [830.06033, 830.09033, -5.44509915452271], [830.10037, 830.25037, -5.489372246791457], [830.26038, 830.32038, -5.522676758081886], [830.33044, 830.49038, -5.489372246791457], [830.50033, 831.46032, -5.522676758081886], [831.47033, 831.89036, -5.489372246791457], [831.90033, 832.06033, -5.522676758081886], [832.07032, 832.12037, -5.489372246791457], [832.13032, 832.35037, -5.522676758081886], [832.36033, 832.44043, -5.489372246791457], [832.45033, 832.48037, -5.44509915452271], [832.49033, 832.57037, -5.489372246791457], [832.58037, 832.61033, -5.44509915452271], [832.62032, 832.76033, -5.489372246791457], [832.77049, 832.87037, -5.522676758081886], [832.88037, 832.95037, -5.489372246791457], [832.96037, 833.31036, -5.522676758081886], [833.32032, 833.32032, -5.3715569956845455], [833.33033, 833.64032, -5.522676758081886], [833.65032, 833.65032, -5.489372246791457], [833.66315, 834.87065, -3.3610087873089083], [834.91271, 834.96032, -5.489372246791457], [834.97032, 834.98032, -5.44509915452271], [834.99032, 835.0804, -5.489372246791457], [835.09032, 835.11037, -5.44509915452271], [835.12037, 835.18032, -5.489372246791457], [835.19047, 835.19047, -5.44509915452271], [835.20032, 835.39042, -5.489372246791457], [835.40037, 835.42032, -5.44509915452271], [835.4306, 835.55032, -5.489372246791457], [835.56037, 835.66032, -5.522676758081886], [835.67036, 836.21037, -5.489372246791457], [836.22032, 836.22032, -5.3715569956845455], [836.23032, 836.27032, -5.489372246791457], [836.28032, 836.29037, -5.3715569956845455], [836.30032, 836.69032, -5.489372246791457], [836.70032, 836.81032, -5.522676758081886], [836.82037, 837.28031, -5.489372246791457], [837.29035, 837.33036, -5.645009712056904], [837.34031, 837.87032, -5.595105993287004], [837.88037, 837.88037, -5.3715569956845455], [837.89032, 837.94037, -5.595105993287004], [837.95037, 837.95037, -5.3715569956845455], [837.96037, 838.48033, -5.645009712056904], [838.49032, 838.5117, -5.522676758081886], [838.52047, 839.03037, -5.645009712056904], [839.04032, 839.13033, -5.595105993287004], [839.14032, 839.29037, -5.566306948433779], [839.30165, 839.85037, -5.595105993287004], [839.86037, 840.24032, -5.566306948433779], [840.25032, 840.40037, -5.595105993287004], [840.41111, 840.41111, -5.3715569956845455], [840.42032, 840.92037, -5.595105993287004], [840.93037, 841.02064, -5.566306948433779], [841.03032, 841.18032, -5.595105993287004], [841.1904, 841.1904, -5.3715569956845455], [841.20036, 841.28036, -5.595105993287004], [841.29037, 841.31037, -5.566306948433779], [841.32032, 841.43037, -5.595105993287004], [841.44032, 841.49033, -5.566306948433779], [841.50032, 841.50032, -5.3715569956845455], [841.51037, 841.64031, -5.566306948433779], [841.65037, 841.88037, -5.595105993287004], [841.89033, 841.9404, -5.566306948433779], [841.95032, 844.91115, -4.986013293184129], [844.92031, 845.04032, -5.595105993287004], [845.05037, 845.67033, -5.566306948433779], [845.68037, 845.77056, -5.595105993287004], [845.78037, 846.19039, -5.566306948433779], [846.20033, 846.30037, -5.595105993287004], [846.31032, 847.57032, -5.566306948433779], [847.58033, 847.58033, -5.3715569956845455], [847.59036, 847.73036, -5.566306948433779], [847.74051, 847.75036, -5.595105993287004], [847.76037, 848.04032, -5.566306948433779], [848.05168, 848.06032, -5.3715569956845455], [848.07033, 848.45033, -5.566306948433779], [848.46032, 848.46032, -5.3715569956845455], [848.47037, 848.49037, -5.522676758081886], [848.50032, 848.53033, -5.489372246791457], [848.54036, 848.97037, -5.44509915452271], [848.98032, 848.98032, -5.3715569956845455], [848.99033, 849.05037, -5.489372246791457], [849.06032, 849.06032, -5.3715569956845455], [849.07033, 849.14033, -5.44509915452271], [849.15036, 849.18037, -5.489372246791457], [849.19039, 849.28033, -5.44509915452271], [849.29036, 849.31036, -5.489372246791457], [849.32033, 849.36033, -5.44509915452271], [849.37036, 849.47036, -5.489372246791457], [849.48037, 849.48037, -5.44509915452271], [849.49032, 849.65032, -5.489372246791457], [849.66033, 849.66033, -5.44509915452271], [849.67036, 849.91112, -5.489372246791457], [849.92036, 850.00036, -5.522676758081886], [850.01033, 850.03032, -5.489372246791457], [850.04037, 850.14037, -5.44509915452271], [850.15037, 850.20032, -5.489372246791457], [850.21033, 850.24036, -5.44509915452271], [850.25037, 850.36036, -5.489372246791457], [850.37033, 850.45033, -5.44509915452271], [850.46032, 850.52055, -5.489372246791457], [850.53037, 850.53037, -5.44509915452271], [850.54036, 850.59033, -5.489372246791457], [850.60032, 850.62032, -5.44509915452271], [850.63033, 850.70037, -5.489372246791457], [850.71037, 850.75036, -5.44509915452271], [850.76031, 850.81035, -5.489372246791457], [850.82036, 850.82036, -5.3715569956845455], [850.83036, 850.94032, -5.566306948433779], [850.95037, 851.01037, -5.595105993287004], [851.02037, 851.07037, -5.522676758081886], [851.08032, 851.76037, -5.595105993287004], [851.77036, 851.77036, -5.3715569956845455], [851.78032, 851.91032, -5.566306948433779], [851.92037, 852.05166, -5.595105993287004], [852.06037, 852.06037, -5.3715569956845455], [852.07037, 852.10057, -5.566306948433779], [852.11036, 852.24057, -5.595105993287004], [852.25037, 852.29037, -4.459518353530754], [852.30037, 852.33032, -4.986013293184129], [852.34033, 855.76033, -4.459518353530754], [855.77077, 855.77077, -5.3715569956845455], [855.78037, 855.92033, -5.595105993287004], [855.93033, 855.99037, -4.986013293184129], [856.00031, 856.10045, -5.595105993287004], [856.11033, 856.11033, -5.3715569956845455], [856.12031, 856.75033, -5.595105993287004], [856.76037, 856.76037, -5.522676758081886], [856.77033, 856.86032, -5.489372246791457], [856.87033, 856.90036, -5.3715569956845455], [856.91033, 856.94037, -5.489372246791457], [856.95033, 856.96032, -5.44509915452271], [856.97037, 857.36037, -5.489372246791457], [857.37032, 857.39036, -5.44509915452271], [857.40037, 857.55032, -5.489372246791457], [857.56033, 857.58033, -5.44509915452271], [857.59032, 857.63032, -5.489372246791457], [857.64037, 857.69032, -5.44509915452271], [857.70033, 857.74037, -5.489372246791457], [857.75036, 857.76037, -5.44509915452271], [857.77062, 858.18036, -5.489372246791457], [858.19033, 858.19033, -5.3715569956845455], [858.20032, 858.36032, -5.489372246791457], [858.37037, 858.45037, -5.522676758081886], [858.46032, 858.54036, -5.489372246791457], [858.55178, 858.57037, -5.44509915452271], [858.58053, 858.72032, -5.489372246791457], [858.73036, 858.74032, -5.44509915452271], [858.75032, 858.80037, -5.489372246791457], [858.81036, 858.88032, -5.44509915452271], [858.89036, 858.95032, -5.489372246791457], [858.96033, 859.30033, -5.44509915452271], [859.31036, 859.41036, -5.489372246791457], [859.42033, 859.42033, -5.44509915452271], [859.43036, 859.58033, -5.489372246791457], [859.59032, 859.85036, -5.44509915452271], [859.86032, 859.94037, -5.489372246791457], [859.95032, 860.03032, -5.44509915452271], [860.04037, 860.19032, -5.489372246791457], [860.20037, 860.21036, -5.44509915452271], [860.22037, 860.29031, -5.489372246791457], [860.30178, 860.32036, -5.44509915452271], [860.33047, 860.54036, -5.489372246791457], [860.55037, 860.56036, -5.44509915452271], [860.57037, 860.70031, -5.489372246791457], [860.71032, 860.86036, -5.44509915452271], [860.87037, 860.93037, -5.489372246791457], [860.94036, 861.27032, -5.44509915452271], [861.28037, 861.3305, -5.489372246791457], [861.34032, 861.39037, -5.44509915452271], [861.40036, 861.48031, -5.489372246791457], [861.49033, 861.49033, -5.3715569956845455], [861.50032, 861.57033, -4.459518353530754], [861.58044, 861.58044, -4.986013293184129], [861.59037, 861.6306, -4.459518353530754], [861.64037, 861.64037, -5.3715569956845455], [861.65032, 862.13037, -5.44509915452271], [862.14036, 862.24032, -5.489372246791457], [862.25033, 862.25033, -4.986013293184129], [862.26032, 862.26032, -5.3715569956845455], [862.27037, 862.42032, -5.489372246791457], [862.43032, 862.45032, -5.44509915452271], [862.46036, 862.47037, -5.489372246791457], [862.48032, 862.64032, -5.522676758081886], [862.65033, 862.88031, -5.645009712056904], [862.89037, 862.89037, -5.522676758081886], [862.90032, 863.01037, -5.489372246791457], [863.02036, 863.03037, -5.44509915452271], [863.04032, 863.06032, -5.489372246791457], [863.07033, 863.13037, -5.44509915452271], [863.14032, 863.16032, -5.489372246791457], [863.17033, 863.19033, -5.44509915452271], [863.20036, 863.20036, -5.3715569956845455], [863.21033, 863.28031, -5.489372246791457], [863.29031, 863.52037, -5.522676758081886], [863.53036, 863.55036, -5.489372246791457], [863.56033, 863.59036, -5.44509915452271], [863.60032, 864.01032, -5.489372246791457], [864.02033, 864.24036, -5.522676758081886], [864.25032, 864.30175, -5.489372246791457], [864.31036, 864.31036, -5.44509915452271], [864.32037, 864.34037, -5.489372246791457], [864.35037, 864.56037, -5.522676758081886], [864.57032, 864.57032, -5.489372246791457], [864.58052, 864.59036, -5.44509915452271], [864.60033, 864.71032, -5.489372246791457], [864.72032, 864.75036, -5.522676758081886], [864.76033, 864.83044, -5.489372246791457], [864.84033, 864.87036, -5.44509915452271], [864.88033, 864.88033, -5.489372246791457], [864.89032, 865.02072, -5.522676758081886], [865.03032, 865.08056, -5.489372246791457], [865.09032, 865.09032, -5.44509915452271], [865.10041, 865.25036, -5.489372246791457], [865.26037, 865.48032, -5.522676758081886], [865.49037, 865.82037, -5.489372246791457], [865.83046, 865.84037, -5.3715569956845455], [865.85041, 865.97037, -5.489372246791457], [865.98032, 865.99051, -5.44509915452271], [866.00032, 866.39037, -5.489372246791457], [866.40037, 866.40037, -5.44509915452271], [866.41032, 866.49037, -5.489372246791457], [866.50037, 866.83056, -5.44509915452271], [866.84037, 866.94037, -5.3715569956845455], [866.95032, 867.57032, -5.44509915452271], [867.58032, 867.85048, -5.489372246791457], [867.86037, 867.86037, -5.44509915452271], [867.87032, 868.26037, -5.489372246791457], [868.27037, 868.32037, -5.44509915452271], [868.33037, 868.49045, -5.489372246791457], [868.50032, 868.57037, -5.44509915452271], [868.5805, 868.60032, -5.489372246791457], [868.61033, 868.74032, -5.44509915452271], [868.75032, 868.89037, -5.489372246791457], [868.90037, 868.98036, -5.44509915452271], [868.99032, 869.05176, -5.489372246791457], [869.06031, 869.06031, -5.3715569956845455], [869.07032, 869.29032, -5.489372246791457], [869.30174, 869.32037, -5.44509915452271], [869.33051, 869.36037, -5.489372246791457], [869.37032, 869.86033, -5.44509915452271], [869.87037, 869.87037, -4.986013293184129], [869.88037, 869.98036, -5.489372246791457], [869.99036, 870.02101, -5.44509915452271], [870.03037, 870.29032, -5.489372246791457], [870.30179, 870.38032, -5.44509915452271], [870.39037, 870.51033, -5.489372246791457], [870.52032, 870.52032, -5.44509915452271], [870.53037, 870.74032, -5.489372246791457], [870.75042, 870.83053, -5.44509915452271], [870.84032, 870.94036, -5.489372246791457], [870.95032, 870.95032, -5.44509915452271], [870.96031, 871.36032, -5.489372246791457], [871.37033, 871.42036, -5.44509915452271], [871.43033, 871.62037, -5.489372246791457], [871.63037, 871.69036, -5.44509915452271], [871.70033, 871.79037, -5.489372246791457], [871.80177, 871.96032, -5.44509915452271], [871.97031, 871.97031, -5.3715569956845455], [871.98033, 872.03032, -5.489372246791457], [872.04037, 872.18033, -5.44509915452271], [872.1904, 872.43036, -5.489372246791457], [872.44037, 872.44037, -5.44509915452271], [872.45036, 872.54037, -5.489372246791457], [872.55174, 872.58056, -5.44509915452271], [872.59037, 874.78037, -4.986013293184129], [874.79037, 874.90033, -5.3715569956845455], [874.91129, 875.77076, -4.986013293184129], [875.78037, 875.79032, -5.3715569956845455], [875.80037, 876.81037, -5.566306948433779], [876.82036, 876.89033, -5.595105993287004], [876.90037, 877.11033, -5.566306948433779], [877.12033, 877.14033, -5.595105993287004], [877.15033, 877.32032, -5.566306948433779], [877.33033, 877.42037, -5.595105993287004], [877.43033, 877.59032, -5.566306948433779], [877.60037, 877.74033, -5.595105993287004], [877.75036, 878.04032, -5.566306948433779], [878.05036, 878.05036, -5.3715569956845455], [878.06036, 878.53032, -5.566306948433779], [878.54037, 878.58055, -5.595105993287004], [878.59032, 878.6304, -5.566306948433779], [878.64037, 878.68033, -5.595105993287004], [878.69039, 878.74033, -4.986013293184129], [878.75031, 878.80176, -5.595105993287004], [878.81031, 879.04033, -5.566306948433779], [879.05032, 879.07032, -5.595105993287004], [879.08033, 879.31032, -5.566306948433779], [879.32037, 879.38047, -5.595105993287004], [879.39032, 879.76032, -5.566306948433779], [879.771, 880.19037, -5.595105993287004], [880.20032, 880.23033, -4.459518353530754], [880.24036, 880.24036, -5.3715569956845455], [880.25037, 880.36031, -5.566306948433779], [880.37033, 880.57033, -5.595105993287004], [880.58033, 881.40037, -5.566306948433779], [881.4113, 881.45037, -5.595105993287004], [881.46032, 881.51037, -5.645009712056904], [881.52081, 881.61032, -5.595105993287004], [881.62037, 881.78032, -5.566306948433779], [881.79037, 881.99032, -5.595105993287004], [882.00036, 882.15032, -5.566306948433779], [882.16132, 882.38041, -5.595105993287004], [882.39032, 882.69037, -5.566306948433779], [882.70037, 882.84037, -5.595105993287004], [882.85032, 883.10037, -5.566306948433779], [883.11032, 883.15037, -5.595105993287004], [883.16135, 883.27081, -5.566306948433779], [883.28032, 883.32037, -5.595105993287004], [883.33055, 883.73037, -5.566306948433779], [883.74032, 883.84032, -5.595105993287004], [883.85037, 884.16133, -5.566306948433779], [884.17032, 884.61032, -5.595105993287004], [884.62037, 884.75037, -5.566306948433779], [884.76037, 884.96036, -5.595105993287004], [884.97032, 885.21031, -5.566306948433779], [885.22031, 885.63037, -5.595105993287004], [885.64037, 885.64037, -5.3715569956845455], [885.65032, 886.97032, -5.566306948433779], [886.98037, 886.99055, -5.595105993287004], [887.00032, 887.21037, -5.645009712056904], [887.22032, 887.24037, -5.595105993287004], [887.25037, 887.53032, -5.566306948433779], [887.54037, 887.57032, -5.522676758081886], [887.58037, 887.60037, -5.595105993287004], [887.61032, 887.81037, -5.566306948433779], [887.82037, 887.91032, -5.595105993287004], [887.92032, 888.14032, -5.566306948433779], [888.15032, 888.16037, -5.595105993287004], [888.17032, 888.18037, -5.566306948433779], [888.19037, 888.21032, -5.595105993287004], [888.22037, 888.40032, -5.645009712056904], [888.41145, 888.46037, -5.595105993287004], [888.47036, 888.70036, -5.566306948433779], [888.71032, 888.88032, -5.595105993287004], [888.89032, 889.00036, -5.566306948433779], [889.01037, 889.01037, -5.3715569956845455], [889.02086, 889.14032, -5.566306948433779], [889.15032, 889.21032, -5.595105993287004], [889.22037, 889.39032, -5.566306948433779], [889.40036, 889.43032, -5.595105993287004], [889.44032, 889.50037, -5.566306948433779], [889.51037, 889.60032, -5.595105993287004], [889.61037, 889.67037, -5.566306948433779], [889.68032, 889.72036, -5.595105993287004], [889.73037, 889.76032, -5.566306948433779], [889.77037, 889.77037, -5.3715569956845455], [889.78037, 889.89032, -5.522676758081886], [889.90032, 890.04032, -5.566306948433779], [890.05032, 890.08037, -5.595105993287004], [890.09037, 890.21037, -5.3715569956845455], [890.22032, 890.23037, -5.566306948433779], [890.24037, 890.25032, -5.3715569956845455], [890.26033, 890.42032, -5.566306948433779], [890.43037, 890.43037, -5.3715569956845455], [890.44032, 890.55037, -5.566306948433779], [890.56032, 890.60037, -5.595105993287004], [890.61037, 891.24032, -5.566306948433779], [891.25032, 891.29032, -5.595105993287004], [891.30037, 891.80031, -5.566306948433779], [891.81031, 891.95036, -5.595105993287004], [891.96032, 892.04037, -5.566306948433779], [892.0511, 892.08051, -5.595105993287004], [892.09032, 892.26032, -5.566306948433779], [892.27037, 892.27037, -5.3715569956845455], [892.28037, 892.66037, -5.566306948433779], [892.67037, 892.67037, -5.3715569956845455], [892.68037, 893.01032, -5.566306948433779], [893.02032, 893.02032, -5.3715569956845455], [893.03037, 893.48032, -5.566306948433779], [893.49037, 893.59037, -5.595105993287004], [893.60037, 893.65032, -5.566306948433779], [893.66037, 893.80113, -5.595105993287004], [893.81037, 894.15033, -5.566306948433779], [894.16037, 894.20032, -4.986013293184129], [894.21033, 894.21033, -5.3715569956845455], [894.22037, 894.35033, -5.566306948433779], [894.36031, 894.57036, -5.595105993287004], [894.58033, 894.66141, -5.566306948433779], [894.67031, 894.67031, -5.3715569956845455], [894.68033, 894.90032, -5.566306948433779], [894.91137, 894.93033, -5.595105993287004], [894.94037, 894.94037, -5.3715569956845455], [894.95032, 895.02091, -5.595105993287004], [895.03032, 895.06037, -5.566306948433779], [895.07033, 895.09037, -5.3715569956845455], [895.10032, 896.19037, -5.566306948433779], [896.20032, 896.21037, -5.3715569956845455], [896.22037, 896.63032, -5.566306948433779], [896.64032, 896.75032, -5.595105993287004], [896.76037, 896.77032, -5.3715569956845455], [896.78036, 896.85032, -5.595105993287004], [896.86037, 896.90033, -5.566306948433779], [896.91032, 896.95037, -5.595105993287004], [896.96033, 897.18037, -5.566306948433779], [897.19045, 897.19045, -5.3715569956845455], [897.20032, 897.32037, -5.566306948433779], [897.33032, 897.33032, -5.3715569956845455], [897.34037, 897.37032, -5.566306948433779], [897.38037, 897.50031, -5.595105993287004], [897.51033, 897.89033, -5.645009712056904], [897.90036, 897.90036, -5.595105993287004], [897.91037, 897.91037, -5.3715569956845455], [897.92032, 897.93032, -5.595105993287004], [897.94039, 897.94039, -5.3715569956845455], [897.95037, 897.95037, -4.459518353530754], [897.96037, 897.99032, -5.3715569956845455], [898.00033, 898.24037, -5.595105993287004], [898.25032, 898.27036, -5.522676758081886], [898.28033, 898.33036, -5.595105993287004], [898.34037, 898.46038, -5.645009712056904], [898.47036, 898.56037, -5.595105993287004], [898.5706, 898.60033, -5.522676758081886], [898.61032, 898.86037, -5.595105993287004], [898.87032, 898.87032, -5.3715569956845455], [898.88042, 898.91138, -5.595105993287004], [898.92032, 898.94043, -5.3715569956845455], [898.95032, 899.23037, -5.595105993287004], [899.24037, 899.40037, -5.566306948433779], [899.41142, 899.53037, -5.595105993287004], [899.54037, 899.62036, -5.522676758081886], [899.63036, 899.64036, -5.3715569956845455], [899.65083, 899.70032, -5.522676758081886]]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 800.02031 - 800.07038 -5.48937224679

1 800.08045 - 800.12038 -5.44509915452

2 800.13038 - 800.13038 -5.48937224679

3 800.14033 - 800.17033 -5.52267675808

4 800.18038 - 800.18038 -5.37155699568

5 800.19033 - 800.21033 -5.48937224679

6 800.22033 - 800.64033 -5.64500971206

7 800.65033 - 800.66116 -5.52267675808

8 800.67033 - 800.70036 -5.37155699568

9 800.71033 - 800.83037 -5.59510599329

10 800.8746 - 800.8746 -5.37155699568

11 800.89957 - 801.23033 -5.64500971206

12 801.24032 - 801.33037 -5.59510599329

13 801.34035 - 801.37036 -5.44509915452

14 801.38098 - 801.39037 -5.48937224679

15 801.40032 - 801.43037 -5.52267675808

16 801.44037 - 801.45032 -5.37155699568

17 801.46037 - 801.48037 -5.52267675808

18 801.49032 - 801.50037 -5.37155699568

19 801.51032 - 801.51032 -4.45951835353

20 801.52037 - 801.52037 -5.37155699568

21 801.53032 - 801.66033 -5.52267675808

22 801.67037 - 801.67037 -5.48937224679

23 801.68033 - 801.69789 -5.44509915452

24 801.72954 - 801.77033 -5.48937224679

25 801.78031 - 801.78031 -5.37155699568

26 801.79037 - 801.87038 -5.48937224679

27 801.88033 - 801.88033 -5.44509915452

28 801.89033 - 801.93037 -5.48937224679

29 801.94038 - 802.00189 -5.44509915452

30 802.01037 - 802.06032 -5.48937224679

31 802.07036 - 802.11032 -5.37155699568

32 802.12032 - 802.25037 -5.52267675808

33 802.26037 - 802.31037 -5.48937224679

34 802.32032 - 802.32032 -5.44509915452

35 802.33037 - 802.42031 -5.48937224679

36 802.46327 - 802.46327 -4.98601329318

37 802.47033 - 802.48033 -5.37155699568

38 802.49037 - 802.51033 -5.52267675808

39 802.52037 - 802.52037 -5.37155699568

40 802.53037 - 802.59032 -5.52267675808

41 802.60036 - 802.65037 -5.48937224679

42 802.66037 - 802.71037 -5.44509915452

43 802.72033 - 802.72033 -5.48937224679

44 802.73037 - 803.01031 -5.52267675808

45 803.02031 - 803.49038 -5.64500971206

46 803.50038 - 803.50038 -5.48937224679

47 803.51038 - 803.85038 -5.64500971206

48 803.86033 - 804.03038 -5.59510599329

49 804.04038 - 804.63038 -5.64500971206

50 804.64032 - 804.75033 -5.59510599329

51 804.76032 - 805.25037 -5.64500971206

52 805.26032 - 805.39037 -5.59510599329

53 805.40037 - 805.77033 -5.64500971206

54 805.78036 - 805.91092 -5.59510599329

55 805.92031 - 806.06036 -5.64500971206

56 806.07038 - 806.18037 -5.59510599329

57 806.19117 - 806.30032 -5.64500971206

58 806.31037 - 806.36037 -5.59510599329

59 806.37032 - 806.43032 -5.56630694843

60 806.44117 - 806.44117 -5.37155699568

61 806.45037 - 806.47048 -5.59510599329

62 806.48037 - 806.52033 -5.64500971206

63 806.53036 - 806.73032 -5.59510599329

64 806.74037 - 807.49033 -5.64500971206

65 807.50037 - 807.50037 -5.59510599329

66 807.5106 - 807.62033 -5.56630694843

67 807.63036 - 807.65036 -5.59510599329

68 807.66106 - 807.93033 -5.64500971206

69 807.94031 - 808.27038 -5.59510599329

70 808.28036 - 810.15032 -5.64500971206

71 810.16033 - 810.16033 -4.98601329318

72 810.17033 - 810.17033 -5.37155699568

73 810.18037 - 810.98037 -5.64500971206

74 810.99037 - 811.01037 -5.52267675808

75 811.02037 - 811.05033 -5.56630694843

76 811.06033 - 811.06033 -5.37155699568

77 811.07033 - 811.19122 -5.48937224679

78 811.20032 - 811.33032 -5.52267675808

79 811.34037 - 811.42032 -5.48937224679

80 811.43033 - 811.51037 -5.52267675808

81 811.52037 - 811.53037 -5.48937224679

82 811.54033 - 811.57033 -5.52267675808

83 811.58037 - 811.58037 -5.37155699568

84 811.59037 - 811.76032 -5.52267675808

85 811.77037 - 811.82037 -5.48937224679

86 811.83048 - 811.88033 -5.52267675808

87 811.89033 - 811.95033 -5.48937224679

88 811.96033 - 812.29037 -5.64500971206

89 812.30149 - 812.30149 -5.48937224679

90 812.31036 - 812.60037 -5.64500971206

91 812.61037 - 812.63052 -5.48937224679

92 812.64037 - 812.64037 -5.44509915452

93 812.65032 - 812.80037 -5.48937224679

94 812.81033 - 812.81033 -5.44509915452

95 812.82032 - 812.90033 -5.48937224679

96 812.91037 - 812.94033 -5.44509915452

97 812.95032 - 812.99032 -5.48937224679

98 813.00037 - 813.07036 -5.52267675808

99 813.08037 - 813.17031 -5.48937224679

100 813.18037 - 813.32037 -5.52267675808

101 813.33032 - 813.33032 -5.37155699568

102 813.34032 - 813.72052 -5.52267675808

103 813.73037 - 813.82036 -5.56630694843

104 813.83037 - 814.11033 -5.52267675808

105 814.12031 - 814.22036 -5.56630694843

106 814.23033 - 814.23033 -5.37155699568

107 814.24036 - 814.38036 -5.56630694843

108 814.39038 - 814.40036 -5.37155699568

109 814.41096 - 814.62036 -5.56630694843

110 814.63033 - 814.64036 -5.37155699568

111 814.65033 - 814.75033 -5.56630694843

112 814.76037 - 814.76037 -5.37155699568

113 814.77033 - 814.87033 -5.56630694843

114 814.88032 - 815.07038 -5.52267675808

115 815.08042 - 815.11033 -5.48937224679

116 815.12032 - 815.17037 -5.64500971206

117 815.18032 - 815.18032 -5.59510599329

118 815.19037 - 815.75031 -5.56630694843

119 815.76031 - 815.77035 -5.37155699568

120 815.78031 - 815.90033 -5.56630694843

121 815.91036 - 815.99036 -5.52267675808

122 816.00037 - 816.01032 -5.37155699568

123 816.02032 - 816.08032 -5.52267675808

124 816.09032 - 816.09032 -5.37155699568

125 816.10037 - 816.13033 -5.52267675808

126 816.14032 - 816.15032 -5.48937224679

127 816.161 - 816.22053 -5.52267675808

128 816.23033 - 816.39032 -5.48937224679

129 816.40032 - 816.78035 -5.52267675808

130 816.79036 - 816.82036 -5.56630694843

131 816.83056 - 816.92037 -5.52267675808

132 816.93032 - 816.93032 -5.37155699568

133 816.94032 - 817.11032 -5.52267675808

134 817.12032 - 817.12032 -5.48937224679

135 817.13032 - 817.13032 -5.44509915452

136 817.14032 - 817.18032 -5.48937224679

137 817.19032 - 817.21032 -5.37155699568

138 817.22036 - 817.25032 -5.48937224679

139 817.26037 - 817.31032 -5.52267675808

140 817.32033 - 817.38037 -5.48937224679

141 817.39036 - 817.39036 -5.37155699568

142 817.40033 - 817.48033 -5.48937224679

143 817.49037 - 817.61033 -5.52267675808

144 817.62037 - 817.90037 -5.48937224679

145 817.91032 - 818.13037 -5.52267675808

146 818.14036 - 818.16032 -5.48937224679

147 818.17037 - 818.17037 -5.44509915452

148 818.18032 - 818.27033 -5.48937224679

149 818.28032 - 818.29038 -5.44509915452

150 818.30036 - 818.30036 -5.48937224679

151 818.31037 - 818.40032 -5.52267675808

152 818.41098 - 818.45033 -5.48937224679

153 818.46032 - 818.48036 -5.44509915452

154 818.49038 - 818.49038 -5.48937224679

155 818.50032 - 818.59036 -5.52267675808

156 818.60033 - 818.60033 -5.48937224679

157 818.61036 - 818.61036 -4.98601329318

158 818.62033 - 818.62033 -5.37155699568

159 818.63032 - 818.67036 -5.52267675808

160 818.68033 - 818.69119 -5.37155699568

161 818.70037 - 818.77036 -5.52267675808

162 818.78037 - 818.87036 -5.64500971206

163 818.88033 - 818.98033 -5.52267675808

164 818.99033 - 818.99033 -5.37155699568

165 819.00033 - 819.14036 -5.48937224679

166 819.15037 - 819.15037 -5.44509915452

167 819.16102 - 819.18037 -5.48937224679

168 819.19037 - 819.23032 -5.52267675808

169 819.24037 - 819.29032 -5.48937224679

170 819.30037 - 819.30037 -5.44509915452

171 819.31032 - 819.44042 -5.48937224679

172 819.45032 - 819.46033 -5.44509915452

173 819.47037 - 819.61032 -5.48937224679

174 819.62038 - 819.62038 -5.44509915452

175 819.63032 - 819.72033 -5.48937224679

176 819.73032 - 819.76033 -5.44509915452

177 819.77035 - 819.79032 -5.48937224679

178 819.80151 - 819.81037 -4.98601329318

179 819.82037 - 819.89033 -5.48937224679

180 819.90032 - 819.94043 -5.44509915452

181 819.95032 - 819.95032 -5.48937224679

182 819.96032 - 819.96032 -5.37155699568

183 819.97052 - 819.97052 -4.45951835353

184 820.00478 - 820.03001 -4.98601329318

185 820.04033 - 820.16102 -5.48937224679

186 820.17037 - 820.34033 -5.52267675808

187 820.35032 - 820.43033 -5.48937224679

188 820.44041 - 820.45033 -5.44509915452

189 820.46038 - 820.77033 -5.48937224679

190 820.78037 - 820.84033 -5.44509915452

191 820.85033 - 820.96037 -5.48937224679

192 820.97048 - 821.07037 -5.44509915452

193 821.08033 - 821.18031 -5.48937224679

194 821.19041 - 821.25037 -4.98601329318

195 821.26032 - 821.26032 -5.37155699568

196 821.27032 - 821.32037 -5.48937224679

197 821.33037 - 821.54033 -5.52267675808

198 821.55033 - 821.55033 -5.37155699568

199 821.56033 - 821.57033 -5.48937224679

200 821.58037 - 821.58037 -5.44509915452

201 821.59033 - 821.73033 -5.48937224679

202 821.74032 - 821.75037 -5.37155699568

203 821.76037 - 821.87037 -5.48937224679

204 821.88031 - 821.88031 -5.37155699568

205 821.89033 - 822.29038 -5.48937224679

206 822.30033 - 822.32033 -5.44509915452

207 822.33033 - 822.86033 -5.48937224679

208 822.87033 - 822.94041 -5.44509915452

209 822.95036 - 822.99037 -5.48937224679

210 823.00037 - 823.00037 -5.44509915452

211 823.01037 - 823.03037 -5.48937224679

212 823.04032 - 823.10033 -5.44509915452

213 823.11033 - 823.18041 -5.48937224679

214 823.19041 - 823.72037 -5.44509915452

215 823.73033 - 823.75033 -5.48937224679

216 823.76033 - 823.85033 -5.44509915452

217 823.86037 - 823.88037 -5.37155699568

218 823.89036 - 823.90031 -5.44509915452

219 823.91097 - 823.98031 -5.48937224679

220 823.99031 - 824.00035 -5.44509915452

221 824.01036 - 824.02031 -5.48937224679

222 824.03036 - 824.07031 -5.37155699568

223 824.08033 - 824.24037 -5.44509915452

224 824.25037 - 824.27037 -5.48937224679

225 824.28037 - 824.30033 -5.44509915452

226 824.31033 - 824.36037 -5.48937224679

227 824.37037 - 824.50037 -5.44509915452

228 824.51037 - 824.52033 -5.48937224679

229 824.53033 - 824.56033 -5.52267675808

230 824.57041 - 824.59033 -5.37155699568

231 824.60033 - 824.62037 -5.52267675808

232 824.63037 - 824.67037 -5.48937224679

233 824.68037 - 824.68037 -5.44509915452

234 824.69041 - 824.85037 -5.48937224679

235 824.86037 - 825.22037 -5.44509915452

236 825.23037 - 825.42036 -5.48937224679

237 825.43032 - 825.51037 -5.44509915452

238 825.52037 - 825.57037 -5.48937224679

239 825.58037 - 825.64037 -5.44509915452

240 825.65056 - 825.68032 -5.48937224679

241 825.69045 - 825.70037 -5.44509915452

242 825.71032 - 825.82037 -5.48937224679

243 825.83032 - 826.00032 -5.44509915452

244 826.01032 - 826.15037 -5.48937224679

245 826.16099 - 826.22037 -5.52267675808

246 826.23037 - 826.23037 -5.37155699568

247 826.24032 - 826.28037 -5.48937224679

248 826.29037 - 826.30032 -5.37155699568

249 826.31032 - 826.36032 -5.52267675808

250 826.37032 - 826.42032 -5.48937224679

251 826.43037 - 826.43037 -5.44509915452

252 826.44041 - 826.56037 -5.48937224679

253 826.57032 - 826.89032 -5.52267675808

254 826.90032 - 826.92036 -5.48937224679

255 826.93032 - 827.01032 -5.52267675808

256 827.02037 - 827.06037 -5.48937224679

257 827.07032 - 827.30156 -5.52267675808

258 827.31032 - 827.33043 -5.48937224679

259 827.34037 - 827.52032 -5.52267675808

260 827.53032 - 827.64037 -5.48937224679

261 827.65037 - 827.65037 -5.44509915452

262 827.66032 - 827.8016 -5.48937224679

263 827.81036 - 828.23031 -5.52267675808

264 828.24093 - 828.40037 -5.64500971206

265 828.41037 - 829.07032 -5.52267675808

266 829.08037 - 829.09037 -5.37155699568

267 829.10037 - 829.16103 -5.48937224679

268 829.17031 - 829.19037 -5.44509915452

269 829.20037 - 829.60033 -5.48937224679

270 829.61031 - 829.73037 -5.52267675808

271 829.74037 - 829.80033 -5.48937224679

272 829.81033 - 829.81033 -5.44509915452

273 829.82033 - 830.05033 -5.48937224679

274 830.06033 - 830.09033 -5.44509915452

275 830.10037 - 830.25037 -5.48937224679

276 830.26038 - 830.32038 -5.52267675808

277 830.33044 - 830.49038 -5.48937224679

278 830.50033 - 831.46032 -5.52267675808

279 831.47033 - 831.89036 -5.48937224679

280 831.90033 - 832.06033 -5.52267675808

281 832.07032 - 832.12037 -5.48937224679

282 832.13032 - 832.35037 -5.52267675808

283 832.36033 - 832.44043 -5.48937224679

284 832.45033 - 832.48037 -5.44509915452

285 832.49033 - 832.57037 -5.48937224679

286 832.58037 - 832.61033 -5.44509915452

287 832.62032 - 832.76033 -5.48937224679

288 832.77049 - 832.87037 -5.52267675808

289 832.88037 - 832.95037 -5.48937224679

290 832.96037 - 833.31036 -5.52267675808

291 833.32032 - 833.32032 -5.37155699568

292 833.33033 - 833.64032 -5.52267675808

293 833.65032 - 833.65032 -5.48937224679

294 833.66315 - 834.87065 -3.36100878731

295 834.91271 - 834.96032 -5.48937224679

296 834.97032 - 834.98032 -5.44509915452

297 834.99032 - 835.0804 -5.48937224679

298 835.09032 - 835.11037 -5.44509915452

299 835.12037 - 835.18032 -5.48937224679

300 835.19047 - 835.19047 -5.44509915452

301 835.20032 - 835.39042 -5.48937224679

302 835.40037 - 835.42032 -5.44509915452

303 835.4306 - 835.55032 -5.48937224679

304 835.56037 - 835.66032 -5.52267675808

305 835.67036 - 836.21037 -5.48937224679

306 836.22032 - 836.22032 -5.37155699568

307 836.23032 - 836.27032 -5.48937224679

308 836.28032 - 836.29037 -5.37155699568

309 836.30032 - 836.69032 -5.48937224679

310 836.70032 - 836.81032 -5.52267675808

311 836.82037 - 837.28031 -5.48937224679

312 837.29035 - 837.33036 -5.64500971206

313 837.34031 - 837.87032 -5.59510599329

314 837.88037 - 837.88037 -5.37155699568

315 837.89032 - 837.94037 -5.59510599329

316 837.95037 - 837.95037 -5.37155699568

317 837.96037 - 838.48033 -5.64500971206

318 838.49032 - 838.5117 -5.52267675808

319 838.52047 - 839.03037 -5.64500971206

320 839.04032 - 839.13033 -5.59510599329

321 839.14032 - 839.29037 -5.56630694843

322 839.30165 - 839.85037 -5.59510599329

323 839.86037 - 840.24032 -5.56630694843

324 840.25032 - 840.40037 -5.59510599329

325 840.41111 - 840.41111 -5.37155699568

326 840.42032 - 840.92037 -5.59510599329

327 840.93037 - 841.02064 -5.56630694843

328 841.03032 - 841.18032 -5.59510599329

329 841.1904 - 841.1904 -5.37155699568

330 841.20036 - 841.28036 -5.59510599329

331 841.29037 - 841.31037 -5.56630694843

332 841.32032 - 841.43037 -5.59510599329

333 841.44032 - 841.49033 -5.56630694843

334 841.50032 - 841.50032 -5.37155699568

335 841.51037 - 841.64031 -5.56630694843

336 841.65037 - 841.88037 -5.59510599329

337 841.89033 - 841.9404 -5.56630694843

338 841.95032 - 844.91115 -4.98601329318

339 844.92031 - 845.04032 -5.59510599329

340 845.05037 - 845.67033 -5.56630694843

341 845.68037 - 845.77056 -5.59510599329

342 845.78037 - 846.19039 -5.56630694843

343 846.20033 - 846.30037 -5.59510599329

344 846.31032 - 847.57032 -5.56630694843

345 847.58033 - 847.58033 -5.37155699568

346 847.59036 - 847.73036 -5.56630694843

347 847.74051 - 847.75036 -5.59510599329

348 847.76037 - 848.04032 -5.56630694843

349 848.05168 - 848.06032 -5.37155699568

350 848.07033 - 848.45033 -5.56630694843

351 848.46032 - 848.46032 -5.37155699568

352 848.47037 - 848.49037 -5.52267675808

353 848.50032 - 848.53033 -5.48937224679

354 848.54036 - 848.97037 -5.44509915452

355 848.98032 - 848.98032 -5.37155699568

356 848.99033 - 849.05037 -5.48937224679

357 849.06032 - 849.06032 -5.37155699568

358 849.07033 - 849.14033 -5.44509915452

359 849.15036 - 849.18037 -5.48937224679

360 849.19039 - 849.28033 -5.44509915452

361 849.29036 - 849.31036 -5.48937224679

362 849.32033 - 849.36033 -5.44509915452

363 849.37036 - 849.47036 -5.48937224679

364 849.48037 - 849.48037 -5.44509915452

365 849.49032 - 849.65032 -5.48937224679

366 849.66033 - 849.66033 -5.44509915452

367 849.67036 - 849.91112 -5.48937224679

368 849.92036 - 850.00036 -5.52267675808

369 850.01033 - 850.03032 -5.48937224679

370 850.04037 - 850.14037 -5.44509915452

371 850.15037 - 850.20032 -5.48937224679

372 850.21033 - 850.24036 -5.44509915452

373 850.25037 - 850.36036 -5.48937224679

374 850.37033 - 850.45033 -5.44509915452

375 850.46032 - 850.52055 -5.48937224679

376 850.53037 - 850.53037 -5.44509915452

377 850.54036 - 850.59033 -5.48937224679

378 850.60032 - 850.62032 -5.44509915452

379 850.63033 - 850.70037 -5.48937224679

380 850.71037 - 850.75036 -5.44509915452

381 850.76031 - 850.81035 -5.48937224679

382 850.82036 - 850.82036 -5.37155699568

383 850.83036 - 850.94032 -5.56630694843

384 850.95037 - 851.01037 -5.59510599329

385 851.02037 - 851.07037 -5.52267675808

386 851.08032 - 851.76037 -5.59510599329

387 851.77036 - 851.77036 -5.37155699568

388 851.78032 - 851.91032 -5.56630694843

389 851.92037 - 852.05166 -5.59510599329

390 852.06037 - 852.06037 -5.37155699568

391 852.07037 - 852.10057 -5.56630694843

392 852.11036 - 852.24057 -5.59510599329

393 852.25037 - 852.29037 -4.45951835353

394 852.30037 - 852.33032 -4.98601329318

395 852.34033 - 855.76033 -4.45951835353

396 855.77077 - 855.77077 -5.37155699568

397 855.78037 - 855.92033 -5.59510599329

398 855.93033 - 855.99037 -4.98601329318

399 856.00031 - 856.10045 -5.59510599329

400 856.11033 - 856.11033 -5.37155699568

401 856.12031 - 856.75033 -5.59510599329

402 856.76037 - 856.76037 -5.52267675808

403 856.77033 - 856.86032 -5.48937224679

404 856.87033 - 856.90036 -5.37155699568

405 856.91033 - 856.94037 -5.48937224679

406 856.95033 - 856.96032 -5.44509915452

407 856.97037 - 857.36037 -5.48937224679

408 857.37032 - 857.39036 -5.44509915452

409 857.40037 - 857.55032 -5.48937224679

410 857.56033 - 857.58033 -5.44509915452

411 857.59032 - 857.63032 -5.48937224679

412 857.64037 - 857.69032 -5.44509915452

413 857.70033 - 857.74037 -5.48937224679

414 857.75036 - 857.76037 -5.44509915452

415 857.77062 - 858.18036 -5.48937224679

416 858.19033 - 858.19033 -5.37155699568

417 858.20032 - 858.36032 -5.48937224679

418 858.37037 - 858.45037 -5.52267675808

419 858.46032 - 858.54036 -5.48937224679

420 858.55178 - 858.57037 -5.44509915452

421 858.58053 - 858.72032 -5.48937224679

422 858.73036 - 858.74032 -5.44509915452

423 858.75032 - 858.80037 -5.48937224679

424 858.81036 - 858.88032 -5.44509915452

425 858.89036 - 858.95032 -5.48937224679

426 858.96033 - 859.30033 -5.44509915452

427 859.31036 - 859.41036 -5.48937224679

428 859.42033 - 859.42033 -5.44509915452

429 859.43036 - 859.58033 -5.48937224679

430 859.59032 - 859.85036 -5.44509915452

431 859.86032 - 859.94037 -5.48937224679

432 859.95032 - 860.03032 -5.44509915452

433 860.04037 - 860.19032 -5.48937224679

434 860.20037 - 860.21036 -5.44509915452

435 860.22037 - 860.29031 -5.48937224679

436 860.30178 - 860.32036 -5.44509915452

437 860.33047 - 860.54036 -5.48937224679

438 860.55037 - 860.56036 -5.44509915452

439 860.57037 - 860.70031 -5.48937224679

440 860.71032 - 860.86036 -5.44509915452

441 860.87037 - 860.93037 -5.48937224679

442 860.94036 - 861.27032 -5.44509915452

443 861.28037 - 861.3305 -5.48937224679

444 861.34032 - 861.39037 -5.44509915452

445 861.40036 - 861.48031 -5.48937224679

446 861.49033 - 861.49033 -5.37155699568

447 861.50032 - 861.57033 -4.45951835353

448 861.58044 - 861.58044 -4.98601329318

449 861.59037 - 861.6306 -4.45951835353

450 861.64037 - 861.64037 -5.37155699568

451 861.65032 - 862.13037 -5.44509915452

452 862.14036 - 862.24032 -5.48937224679

453 862.25033 - 862.25033 -4.98601329318

454 862.26032 - 862.26032 -5.37155699568

455 862.27037 - 862.42032 -5.48937224679

456 862.43032 - 862.45032 -5.44509915452

457 862.46036 - 862.47037 -5.48937224679

458 862.48032 - 862.64032 -5.52267675808

459 862.65033 - 862.88031 -5.64500971206

460 862.89037 - 862.89037 -5.52267675808

461 862.90032 - 863.01037 -5.48937224679

462 863.02036 - 863.03037 -5.44509915452

463 863.04032 - 863.06032 -5.48937224679

464 863.07033 - 863.13037 -5.44509915452

465 863.14032 - 863.16032 -5.48937224679

466 863.17033 - 863.19033 -5.44509915452

467 863.20036 - 863.20036 -5.37155699568

468 863.21033 - 863.28031 -5.48937224679

469 863.29031 - 863.52037 -5.52267675808

470 863.53036 - 863.55036 -5.48937224679

471 863.56033 - 863.59036 -5.44509915452

472 863.60032 - 864.01032 -5.48937224679

473 864.02033 - 864.24036 -5.52267675808

474 864.25032 - 864.30175 -5.48937224679

475 864.31036 - 864.31036 -5.44509915452

476 864.32037 - 864.34037 -5.48937224679

477 864.35037 - 864.56037 -5.52267675808

478 864.57032 - 864.57032 -5.48937224679

479 864.58052 - 864.59036 -5.44509915452

480 864.60033 - 864.71032 -5.48937224679

481 864.72032 - 864.75036 -5.52267675808

482 864.76033 - 864.83044 -5.48937224679

483 864.84033 - 864.87036 -5.44509915452

484 864.88033 - 864.88033 -5.48937224679

485 864.89032 - 865.02072 -5.52267675808

486 865.03032 - 865.08056 -5.48937224679

487 865.09032 - 865.09032 -5.44509915452

488 865.10041 - 865.25036 -5.48937224679

489 865.26037 - 865.48032 -5.52267675808

490 865.49037 - 865.82037 -5.48937224679

491 865.83046 - 865.84037 -5.37155699568

492 865.85041 - 865.97037 -5.48937224679

493 865.98032 - 865.99051 -5.44509915452

494 866.00032 - 866.39037 -5.48937224679

495 866.40037 - 866.40037 -5.44509915452

496 866.41032 - 866.49037 -5.48937224679

497 866.50037 - 866.83056 -5.44509915452

498 866.84037 - 866.94037 -5.37155699568

499 866.95032 - 867.57032 -5.44509915452

500 867.58032 - 867.85048 -5.48937224679

501 867.86037 - 867.86037 -5.44509915452

502 867.87032 - 868.26037 -5.48937224679

503 868.27037 - 868.32037 -5.44509915452

504 868.33037 - 868.49045 -5.48937224679

505 868.50032 - 868.57037 -5.44509915452

506 868.5805 - 868.60032 -5.48937224679

507 868.61033 - 868.74032 -5.44509915452

508 868.75032 - 868.89037 -5.48937224679

509 868.90037 - 868.98036 -5.44509915452

510 868.99032 - 869.05176 -5.48937224679

511 869.06031 - 869.06031 -5.37155699568

512 869.07032 - 869.29032 -5.48937224679

513 869.30174 - 869.32037 -5.44509915452

514 869.33051 - 869.36037 -5.48937224679

515 869.37032 - 869.86033 -5.44509915452

516 869.87037 - 869.87037 -4.98601329318

517 869.88037 - 869.98036 -5.48937224679

518 869.99036 - 870.02101 -5.44509915452

519 870.03037 - 870.29032 -5.48937224679

520 870.30179 - 870.38032 -5.44509915452

521 870.39037 - 870.51033 -5.48937224679

522 870.52032 - 870.52032 -5.44509915452

523 870.53037 - 870.74032 -5.48937224679

524 870.75042 - 870.83053 -5.44509915452

525 870.84032 - 870.94036 -5.48937224679

526 870.95032 - 870.95032 -5.44509915452

527 870.96031 - 871.36032 -5.48937224679

528 871.37033 - 871.42036 -5.44509915452

529 871.43033 - 871.62037 -5.48937224679

530 871.63037 - 871.69036 -5.44509915452

531 871.70033 - 871.79037 -5.48937224679

532 871.80177 - 871.96032 -5.44509915452

533 871.97031 - 871.97031 -5.37155699568

534 871.98033 - 872.03032 -5.48937224679

535 872.04037 - 872.18033 -5.44509915452

536 872.1904 - 872.43036 -5.48937224679

537 872.44037 - 872.44037 -5.44509915452

538 872.45036 - 872.54037 -5.48937224679

539 872.55174 - 872.58056 -5.44509915452

540 872.59037 - 874.78037 -4.98601329318

541 874.79037 - 874.90033 -5.37155699568

542 874.91129 - 875.77076 -4.98601329318

543 875.78037 - 875.79032 -5.37155699568

544 875.80037 - 876.81037 -5.56630694843

545 876.82036 - 876.89033 -5.59510599329

546 876.90037 - 877.11033 -5.56630694843

547 877.12033 - 877.14033 -5.59510599329

548 877.15033 - 877.32032 -5.56630694843

549 877.33033 - 877.42037 -5.59510599329

550 877.43033 - 877.59032 -5.56630694843

551 877.60037 - 877.74033 -5.59510599329

552 877.75036 - 878.04032 -5.56630694843

553 878.05036 - 878.05036 -5.37155699568

554 878.06036 - 878.53032 -5.56630694843

555 878.54037 - 878.58055 -5.59510599329

556 878.59032 - 878.6304 -5.56630694843

557 878.64037 - 878.68033 -5.59510599329

558 878.69039 - 878.74033 -4.98601329318

559 878.75031 - 878.80176 -5.59510599329

560 878.81031 - 879.04033 -5.56630694843

561 879.05032 - 879.07032 -5.59510599329

562 879.08033 - 879.31032 -5.56630694843

563 879.32037 - 879.38047 -5.59510599329

564 879.39032 - 879.76032 -5.56630694843

565 879.771 - 880.19037 -5.59510599329

566 880.20032 - 880.23033 -4.45951835353

567 880.24036 - 880.24036 -5.37155699568

568 880.25037 - 880.36031 -5.56630694843

569 880.37033 - 880.57033 -5.59510599329

570 880.58033 - 881.40037 -5.56630694843

571 881.4113 - 881.45037 -5.59510599329

572 881.46032 - 881.51037 -5.64500971206

573 881.52081 - 881.61032 -5.59510599329

574 881.62037 - 881.78032 -5.56630694843

575 881.79037 - 881.99032 -5.59510599329

576 882.00036 - 882.15032 -5.56630694843

577 882.16132 - 882.38041 -5.59510599329

578 882.39032 - 882.69037 -5.56630694843

579 882.70037 - 882.84037 -5.59510599329

580 882.85032 - 883.10037 -5.56630694843

581 883.11032 - 883.15037 -5.59510599329

582 883.16135 - 883.27081 -5.56630694843

583 883.28032 - 883.32037 -5.59510599329

584 883.33055 - 883.73037 -5.56630694843

585 883.74032 - 883.84032 -5.59510599329

586 883.85037 - 884.16133 -5.56630694843

587 884.17032 - 884.61032 -5.59510599329

588 884.62037 - 884.75037 -5.56630694843

589 884.76037 - 884.96036 -5.59510599329

590 884.97032 - 885.21031 -5.56630694843

591 885.22031 - 885.63037 -5.59510599329

592 885.64037 - 885.64037 -5.37155699568

593 885.65032 - 886.97032 -5.56630694843

594 886.98037 - 886.99055 -5.59510599329

595 887.00032 - 887.21037 -5.64500971206

596 887.22032 - 887.24037 -5.59510599329

597 887.25037 - 887.53032 -5.56630694843

598 887.54037 - 887.57032 -5.52267675808

599 887.58037 - 887.60037 -5.59510599329

600 887.61032 - 887.81037 -5.56630694843

601 887.82037 - 887.91032 -5.59510599329

602 887.92032 - 888.14032 -5.56630694843

603 888.15032 - 888.16037 -5.59510599329

604 888.17032 - 888.18037 -5.56630694843

605 888.19037 - 888.21032 -5.59510599329

606 888.22037 - 888.40032 -5.64500971206

607 888.41145 - 888.46037 -5.59510599329

608 888.47036 - 888.70036 -5.56630694843

609 888.71032 - 888.88032 -5.59510599329

610 888.89032 - 889.00036 -5.56630694843

611 889.01037 - 889.01037 -5.37155699568

612 889.02086 - 889.14032 -5.56630694843

613 889.15032 - 889.21032 -5.59510599329

614 889.22037 - 889.39032 -5.56630694843

615 889.40036 - 889.43032 -5.59510599329

616 889.44032 - 889.50037 -5.56630694843

617 889.51037 - 889.60032 -5.59510599329

618 889.61037 - 889.67037 -5.56630694843

619 889.68032 - 889.72036 -5.59510599329

620 889.73037 - 889.76032 -5.56630694843

621 889.77037 - 889.77037 -5.37155699568

622 889.78037 - 889.89032 -5.52267675808

623 889.90032 - 890.04032 -5.56630694843

624 890.05032 - 890.08037 -5.59510599329

625 890.09037 - 890.21037 -5.37155699568

626 890.22032 - 890.23037 -5.56630694843

627 890.24037 - 890.25032 -5.37155699568

628 890.26033 - 890.42032 -5.56630694843

629 890.43037 - 890.43037 -5.37155699568

630 890.44032 - 890.55037 -5.56630694843

631 890.56032 - 890.60037 -5.59510599329

632 890.61037 - 891.24032 -5.56630694843

633 891.25032 - 891.29032 -5.59510599329

634 891.30037 - 891.80031 -5.56630694843

635 891.81031 - 891.95036 -5.59510599329

636 891.96032 - 892.04037 -5.56630694843

637 892.0511 - 892.08051 -5.59510599329

638 892.09032 - 892.26032 -5.56630694843

639 892.27037 - 892.27037 -5.37155699568

640 892.28037 - 892.66037 -5.56630694843

641 892.67037 - 892.67037 -5.37155699568

642 892.68037 - 893.01032 -5.56630694843

643 893.02032 - 893.02032 -5.37155699568

644 893.03037 - 893.48032 -5.56630694843

645 893.49037 - 893.59037 -5.59510599329

646 893.60037 - 893.65032 -5.56630694843

647 893.66037 - 893.80113 -5.59510599329

648 893.81037 - 894.15033 -5.56630694843

649 894.16037 - 894.20032 -4.98601329318

650 894.21033 - 894.21033 -5.37155699568

651 894.22037 - 894.35033 -5.56630694843

652 894.36031 - 894.57036 -5.59510599329

653 894.58033 - 894.66141 -5.56630694843

654 894.67031 - 894.67031 -5.37155699568

655 894.68033 - 894.90032 -5.56630694843

656 894.91137 - 894.93033 -5.59510599329

657 894.94037 - 894.94037 -5.37155699568

658 894.95032 - 895.02091 -5.59510599329

659 895.03032 - 895.06037 -5.56630694843

660 895.07033 - 895.09037 -5.37155699568

661 895.10032 - 896.19037 -5.56630694843

662 896.20032 - 896.21037 -5.37155699568

663 896.22037 - 896.63032 -5.56630694843

664 896.64032 - 896.75032 -5.59510599329

665 896.76037 - 896.77032 -5.37155699568

666 896.78036 - 896.85032 -5.59510599329

667 896.86037 - 896.90033 -5.56630694843

668 896.91032 - 896.95037 -5.59510599329

669 896.96033 - 897.18037 -5.56630694843

670 897.19045 - 897.19045 -5.37155699568

671 897.20032 - 897.32037 -5.56630694843

672 897.33032 - 897.33032 -5.37155699568

673 897.34037 - 897.37032 -5.56630694843

674 897.38037 - 897.50031 -5.59510599329

675 897.51033 - 897.89033 -5.64500971206

676 897.90036 - 897.90036 -5.59510599329

677 897.91037 - 897.91037 -5.37155699568

678 897.92032 - 897.93032 -5.59510599329

679 897.94039 - 897.94039 -5.37155699568

680 897.95037 - 897.95037 -4.45951835353

681 897.96037 - 897.99032 -5.37155699568

682 898.00033 - 898.24037 -5.59510599329

683 898.25032 - 898.27036 -5.52267675808

684 898.28033 - 898.33036 -5.59510599329

685 898.34037 - 898.46038 -5.64500971206

686 898.47036 - 898.56037 -5.59510599329

687 898.5706 - 898.60033 -5.52267675808

688 898.61032 - 898.86037 -5.59510599329

689 898.87032 - 898.87032 -5.37155699568

690 898.88042 - 898.91138 -5.59510599329

691 898.92032 - 898.94043 -5.37155699568

692 898.95032 - 899.23037 -5.59510599329

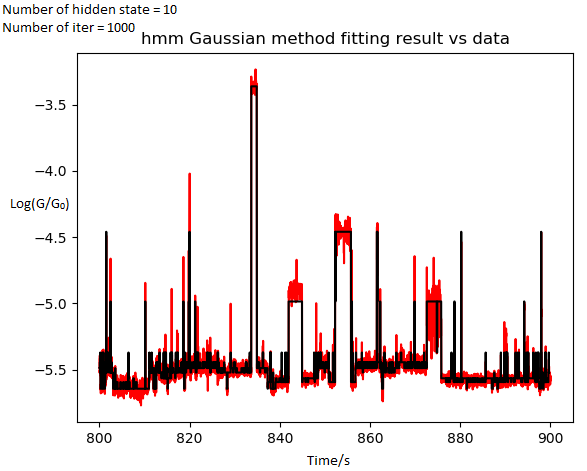
693 899.24037 - 899.40037 -5.56630694843

694 899.41142 - 899.53037 -5.59510599329

695 899.54037 - 899.62036 -5.52267675808

696 899.63036 - 899.64036 -5.37155699568

697 899.65083 - 899.70032 -5.52267675808



Temperature Variation (77K)

n component = 5, n iter = 1000

done fitting to HMM

Transition matrix

[[9.23631682e-01 1.70625637e-37 2.04174454e-02 4.72986943e-02

8.65217863e-03]

[1.15048276e-03 9.88608494e-01 6.16983927e-03 1.48971293e-03

2.58147057e-03]

[1.63925355e-02 1.42681489e-03 8.74731794e-01 7.90133025e-02

2.84355536e-02]

[2.03734283e-02 1.09011664e-03 5.00282004e-02 9.23758416e-01

4.74983884e-03]

[6.74519443e-03 4.94910748e-03 4.11410901e-02 1.42980720e-02

9.32866536e-01]]

Means and Variance of each hidden state

0th hidden state

mean = [-6.38213862]

variance = [0.00985336]

1th hidden state

mean = [-3.98549589]

variance = [0.03646276]

2th hidden state

mean = [-6.06157638]

variance = [0.01193632]

3th hidden state

mean = [-6.23459077]

variance = [0.00657786]

4th hidden state

mean = [-5.60727261]

variance = [0.05195241]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 100.02037 - 100.26033 -6.06157638146

1 100.27032 - 100.27032 -5.60727260783

2 100.28037 - 100.36033 -6.06157638146

3 100.37032 - 100.43032 -5.60727260783

4 100.44033 - 100.49036 -6.06157638146

5 100.50037 - 100.53055 -6.23459076714

6 100.54037 - 101.04037 -6.06157638146

7 101.05037 - 101.29033 -6.23459076714

8 101.30036 - 101.48057 -6.06157638146

9 101.49032 - 101.59033 -6.23459076714

10 101.60032 - 101.65037 -6.06157638146

11 101.66036 - 101.77032 -6.23459076714

12 101.78036 - 101.85037 -6.06157638146

13 101.86032 - 101.99037 -6.23459076714

14 102.00037 - 102.0613 -6.06157638146

15 102.07032 - 102.19037 -6.23459076714

16 102.20174 - 102.75032 -6.38213861802

17 102.76037 - 103.0613 -6.23459076714

18 103.07036 - 103.08032 -6.06157638146

19 103.09039 - 103.11036 -5.60727260783

20 103.12032 - 103.13032 -6.06157638146

21 103.14032 - 103.33036 -6.23459076714

22 103.34037 - 103.42037 -6.06157638146

23 103.43036 - 103.66036 -6.23459076714

24 103.67105 - 103.81131 -6.38213861802

25 103.82036 - 104.00036 -6.23459076714

26 104.01037 - 104.28032 -6.06157638146

27 104.29037 - 104.63037 -6.23459076714

28 104.64032 - 104.83033 -6.38213861802

29 104.8404 - 104.87032 -6.23459076714

30 104.88031 - 104.98037 -6.06157638146

31 104.99037 - 105.00037 -5.60727260783

32 105.01037 - 105.15032 -6.23459076714

33 105.16032 - 105.24032 -6.06157638146

34 105.25033 - 105.27037 -6.23459076714

35 105.28036 - 105.32032 -6.38213861802

36 105.33037 - 105.38037 -6.06157638146

37 105.39037 - 105.56038 -5.60727260783

38 105.57038 - 105.63037 -6.38213861802

39 105.64081 - 105.72038 -6.06157638146

40 105.73051 - 106.09047 -6.23459076714

41 106.10038 - 106.11033 -6.06157638146

42 106.12038 - 106.20038 -6.38213861802

43 106.21038 - 106.37033 -6.23459076714

44 106.38033 - 106.39033 -6.06157638146

45 106.40033 - 106.49033 -6.23459076714

46 106.50038 - 106.51038 -6.06157638146

47 106.52038 - 106.59033 -6.23459076714

48 106.60033 - 106.69038 -6.06157638146

49 106.70038 - 106.89033 -6.38213861802

50 106.90035 - 106.93036 -5.60727260783

51 106.94033 - 106.98033 -6.06157638146

52 106.99038 - 107.00033 -5.60727260783

53 107.01038 - 107.11033 -6.06157638146

54 107.12033 - 107.21038 -5.60727260783

55 107.22033 - 107.28038 -6.06157638146

56 107.29033 - 107.32038 -6.38213861802

57 107.33033 - 108.07037 -5.60727260783

58 108.08058 - 108.50037 -6.06157638146

59 108.51033 - 108.54032 -5.60727260783

60 108.55038 - 108.68037 -6.06157638146

61 108.69038 - 108.70175 -5.60727260783

62 108.71038 - 108.89038 -6.06157638146

63 108.90037 - 108.96032 -5.60727260783

64 108.97038 - 109.22032 -6.06157638146

65 109.23059 - 109.96037 -5.60727260783

66 109.97033 - 110.15032 -6.06157638146

67 110.16038 - 110.19037 -6.23459076714

68 110.20178 - 110.30037 -6.06157638146

69 110.31124 - 110.44037 -6.23459076714

70 110.45179 - 110.55037 -6.06157638146

71 110.56037 - 110.57037 -6.23459076714

72 110.58032 - 110.5904 -6.06157638146

73 110.60032 - 110.66032 -6.23459076714

74 110.67038 - 110.78032 -6.38213861802

75 110.79038 - 110.82032 -6.06157638146

76 110.83037 - 110.84047 -5.60727260783

77 110.85038 - 110.88037 -6.06157638146

78 110.89033 - 110.96032 -5.60727260783

79 110.97038 - 111.00037 -6.06157638146

80 111.01033 - 111.07033 -6.23459076714

81 111.08032 - 111.14032 -6.38213861802

82 111.15033 - 111.22032 -6.23459076714

83 111.23033 - 111.56037 -6.38213861802

84 111.57038 - 111.62032 -6.06157638146

85 111.63033 - 111.73038 -6.23459076714

86 111.74032 - 111.78032 -6.06157638146

87 111.79033 - 111.84043 -6.38213861802

88 111.85033 - 111.89033 -6.23459076714

89 111.90035 - 111.90035 -6.06157638146

90 111.91032 - 111.94033 -5.60727260783

91 111.95174 - 112.07037 -6.23459076714

92 112.08037 - 112.15038 -6.06157638146

93 112.16036 - 112.29037 -6.38213861802

94 112.30032 - 112.46032 -6.23459076714

95 112.47038 - 112.60032 -6.06157638146

96 112.61033 - 112.64032 -6.38213861802

97 112.65033 - 112.65033 -5.60727260783

98 112.66037 - 112.66037 -6.06157638146

99 112.67086 - 112.82036 -6.38213861802

100 112.83033 - 112.87033 -6.06157638146

101 112.88032 - 112.93036 -6.38213861802

102 112.94038 - 113.08033 -6.23459076714

103 113.09037 - 113.12033 -6.06157638146

104 113.13037 - 113.17032 -6.23459076714

105 113.18033 - 113.53037 -6.38213861802

106 113.54033 - 113.59039 -6.23459076714

107 113.60036 - 113.64037 -6.06157638146

108 113.65037 - 113.90033 -6.38213861802

109 113.91032 - 113.95175 -6.23459076714

110 113.96033 - 114.0613 -6.38213861802

111 114.07032 - 114.11037 -6.06157638146

112 114.12038 - 114.22033 -6.23459076714

113 114.23037 - 114.25032 -5.60727260783

114 114.26038 - 114.47033 -6.23459076714

115 114.48054 - 114.49033 -5.60727260783

116 114.50037 - 114.53033 -6.06157638146

117 114.54036 - 114.68031 -5.60727260783

118 114.6907 - 115.68036 -6.06157638146

119 115.69033 - 115.81033 -5.60727260783

120 115.82032 - 115.95037 -6.06157638146

121 115.96037 - 116.01037 -5.60727260783

122 116.02033 - 116.10036 -6.06157638146

123 116.11036 - 116.21032 -6.23459076714

124 116.22032 - 116.25037 -6.06157638146

125 116.26037 - 116.44032 -6.23459076714

126 116.45037 - 116.45037 -6.06157638146

127 116.46032 - 116.59037 -6.23459076714

128 116.60032 - 116.61032 -6.06157638146

129 116.62037 - 116.70178 -5.60727260783

130 116.73447 - 117.16064 -3.98549588686

131 117.1876 - 117.36037 -6.06157638146

132 117.37036 - 117.37036 -5.60727260783

133 117.38032 - 117.75032 -6.06157638146

134 117.79614 - 119.02064 -3.98549588686

135 119.04526 - 119.26037 -6.23459076714

136 119.27037 - 119.27037 -5.60727260783

137 119.30219 - 119.31185 -3.98549588686

138 119.36961 - 119.48051 -6.06157638146

139 119.49037 - 119.56125 -6.23459076714

140 119.60467 - 119.61069 -3.98549588686

141 119.63753 - 119.98032 -6.06157638146

142 120.01762 - 124.0007 -3.98549588686

143 124.02755 - 124.02755 -6.06157638146

144 124.04037 - 124.07038 -6.23459076714

145 124.08033 - 124.15033 -6.06157638146

146 124.16033 - 124.16033 -5.60727260783

147 124.19051 - 124.26064 -3.98549588686

148 124.28956 - 124.28956 -5.60727260783

149 124.30037 - 124.41033 -6.23459076714

150 124.42033 - 124.48027 -5.60727260783

151 124.51034 - 124.52033 -6.06157638146

152 124.53033 - 124.80037 -6.23459076714

153 124.81037 - 125.04031 -6.06157638146

154 125.07373 - 128.59069 -3.98549588686

155 128.61956 - 128.64033 -6.06157638146

156 128.65033 - 128.67037 -5.60727260783

157 128.68037 - 128.70037 -6.06157638146

158 128.71033 - 128.72037 -5.60727260783

159 128.73055 - 128.74033 -6.06157638146

160 128.75033 - 128.81133 -6.23459076714

161 128.82037 - 128.87032 -6.06157638146

162 128.88037 - 129.02037 -5.60727260783

163 129.03056 - 129.03056 -6.06157638146

164 129.04032 - 129.06037 -6.23459076714

165 129.07032 - 129.07032 -5.60727260783

166 129.10139 - 129.14065 -3.98549588686

167 129.16527 - 129.19033 -6.06157638146

168 129.20174 - 129.21033 -5.60727260783

169 129.22033 - 129.37036 -6.06157638146

170 129.38032 - 129.44036 -6.23459076714

171 129.45173 - 129.90033 -6.06157638146

172 129.91036 - 130.50033 -6.23459076714

173 130.51036 - 130.52037 -6.06157638146

174 130.53036 - 130.53036 -5.60727260783

175 130.54037 - 130.70033 -6.23459076714

176 130.71031 - 130.74037 -6.06157638146

177 130.75036 - 130.86033 -6.23459076714

178 130.87036 - 130.89032 -5.60727260783

179 130.90037 - 131.18037 -6.23459076714

180 131.19031 - 131.22037 -6.38213861802

181 131.23036 - 131.93037 -6.06157638146

182 131.94032 - 131.99037 -6.23459076714

183 132.025 - 134.1907 -3.98549588686

184 134.2175 - 134.62037 -6.23459076714

185 134.63037 - 134.64037 -6.06157638146

186 134.65785 - 134.80033 -5.60727260783

187 134.81135 - 134.89033 -6.23459076714

188 134.90033 - 134.92037 -6.06157638146

189 134.93038 - 135.03037 -6.23459076714

190 135.04033 - 135.08037 -6.06157638146

191 135.09046 - 135.16038 -6.23459076714

192 135.17033 - 135.19033 -6.06157638146

193 135.20038 - 135.30038 -6.23459076714

194 135.31038 - 135.31038 -6.06157638146

195 135.32033 - 135.34033 -6.38213861802

196 135.35038 - 135.43033 -6.06157638146

197 135.44033 - 135.46038 -6.23459076714

198 135.47038 - 135.47038 -3.98549588686

199 135.48056 - 135.52038 -6.06157638146

200 135.53061 - 135.61038 -6.23459076714

201 135.62033 - 135.62033 -6.06157638146

202 135.63038 - 135.65035 -5.60727260783

203 135.66037 - 135.78462 -6.23459076714

204 135.80523 - 135.8404 -5.60727260783

205 135.85033 - 136.02032 -6.23459076714

206 136.05207 - 136.06185 -3.98549588686

207 136.09535 - 136.10037 -6.38213861802

208 136.11032 - 136.13037 -6.06157638146

209 136.14037 - 136.14037 -5.60727260783

210 136.15033 - 136.18033 -6.23459076714

211 136.19037 - 136.19037 -6.06157638146

212 136.20177 - 136.22032 -6.38213861802

213 136.23051 - 136.37033 -6.23459076714

214 136.38037 - 136.38037 -6.06157638146

215 136.39033 - 136.42033 -6.38213861802

216 136.43037 - 136.44037 -6.06157638146

217 136.45037 - 136.50033 -6.23459076714

218 136.51037 - 136.56033 -6.06157638146

219 136.57037 - 136.63033 -6.23459076714

220 136.64037 - 136.65037 -6.06157638146

221 136.66037 - 136.98032 -6.38213861802

222 136.99033 - 136.99033 -6.06157638146

223 137.00037 - 137.54037 -6.38213861802

224 137.55037 - 137.66033 -6.23459076714

225 137.67033 - 137.79033 -6.38213861802

226 137.80033 - 138.08033 -6.23459076714

227 138.09044 - 138.21037 -6.38213861802

228 138.22037 - 138.50037 -6.23459076714

229 138.51037 - 138.51037 -5.60727260783

230 138.52037 - 138.86037 -6.23459076714

231 138.87033 - 138.91037 -6.06157638146

232 138.92037 - 138.94037 -5.60727260783

233 138.95037 - 138.96036 -6.23459076714

234 138.97032 - 138.97032 -6.06157638146

235 138.98033 - 139.00033 -6.23459076714

236 139.01033 - 139.03033 -6.38213861802

237 139.04037 - 139.32037 -6.23459076714

238 139.33037 - 139.47032 -6.38213861802

239 139.48037 - 139.49037 -6.23459076714

240 139.50037 - 139.82037 -6.06157638146

241 139.83032 - 140.11032 -5.60727260783

242 140.12037 - 140.14078 -6.06157638146

243 140.15033 - 140.22033 -6.23459076714

244 140.23033 - 140.45177 -6.06157638146

245 140.46038 - 140.64037 -6.23459076714

246 140.65035 - 140.82032 -6.06157638146

247 140.83033 - 140.89037 -5.60727260783

248 140.90037 - 141.07037 -6.06157638146

249 141.08032 - 141.19052 -6.23459076714

250 141.2018 - 141.40032 -6.38213861802

251 141.41032 - 141.51037 -6.23459076714

252 141.52032 - 141.70176 -6.38213861802

253 141.71032 - 141.73032 -6.23459076714

254 141.74037 - 141.76032 -6.06157638146

255 141.77032 - 142.00037 -6.23459076714

256 142.01036 - 142.26037 -6.06157638146

257 142.27036 - 142.38032 -5.60727260783

258 142.39037 - 142.43032 -6.06157638146

259 142.44037 - 142.46036 -5.60727260783

260 142.47032 - 142.56036 -6.23459076714

261 142.57032 - 142.79037 -6.38213861802

262 142.80036 - 143.18037 -6.23459076714

263 143.19037 - 143.22032 -6.06157638146

264 143.23032 - 143.47033 -6.23459076714

265 143.48037 - 143.48037 -6.06157638146

266 143.49037 - 143.51032 -5.60727260783

267 143.52032 - 144.20032 -6.23459076714

268 144.21032 - 144.21032 -6.06157638146

269 144.22036 - 144.60036 -6.23459076714

270 144.61036 - 144.68032 -6.38213861802

271 144.69032 - 144.74037 -6.23459076714

272 144.75036 - 144.76032 -6.06157638146

273 144.77032 - 145.47037 -6.23459076714

274 145.48032 - 145.48032 -6.06157638146

275 145.49032 - 148.19032 -6.23459076714

276 148.20177 - 148.21037 -6.06157638146

277 148.22037 - 148.36037 -6.38213861802

278 148.37032 - 148.40032 -6.23459076714

279 148.41033 - 148.44032 -6.06157638146

280 148.45032 - 150.31131 -6.23459076714

281 150.32036 - 150.40037 -6.06157638146

282 150.41037 - 150.66032 -6.23459076714

283 150.67032 - 150.67032 -6.06157638146

284 150.68032 - 150.69032 -6.23459076714

285 150.70175 - 150.81032 -6.38213861802

286 150.82036 - 150.85032 -6.06157638146

287 150.86036 - 150.93032 -6.23459076714

288 150.94036 - 150.94036 -5.60727260783

289 150.95032 - 151.55032 -6.23459076714

290 151.56032 - 151.56032 -6.06157638146

291 151.57036 - 151.57036 -5.60727260783

292 151.58032 - 151.61032 -6.23459076714

293 151.62032 - 154.26033 -5.60727260783

294 154.27037 - 154.29032 -6.23459076714

295 154.30033 - 154.34048 -6.06157638146

296 154.35032 - 154.48032 -6.23459076714

297 154.49037 - 154.52032 -6.06157638146

298 154.53037 - 155.75033 -5.60727260783

299 155.76032 - 155.76032 -6.06157638146

300 155.77038 - 155.78032 -6.38213861802

301 155.79037 - 155.94032 -5.60727260783

302 155.95182 - 156.01036 -6.06157638146

303 156.02037 - 157.62033 -5.60727260783

304 157.63038 - 157.70037 -6.38213861802

305 157.71033 - 158.52032 -5.60727260783

306 158.53037 - 158.62037 -6.06157638146

307 158.63037 - 158.70032 -5.60727260783

308 158.71037 - 158.77032 -6.06157638146

309 158.78052 - 158.78052 -5.60727260783

310 158.79032 - 158.84048 -6.06157638146

311 158.85032 - 158.87032 -5.60727260783

312 158.88036 - 158.98037 -6.06157638146

313 158.99037 - 159.80037 -5.60727260783

314 159.81037 - 159.87036 -6.38213861802

315 159.88036 - 160.75037 -5.60727260783

316 160.76037 - 160.78033 -6.06157638146

317 160.79037 - 160.95037 -5.60727260783

318 160.96032 - 161.09048 -6.38213861802

319 161.10037 - 161.57037 -5.60727260783

320 161.58032 - 161.63037 -6.06157638146

321 161.64047 - 161.67032 -5.60727260783

322 161.68032 - 161.69037 -6.38213861802

323 161.70037 - 161.71037 -6.06157638146

324 161.72037 - 162.01037 -5.60727260783

325 162.02037 - 162.09048 -6.23459076714

326 162.10037 - 162.20037 -6.06157638146

327 162.21031 - 162.40033 -6.23459076714

328 162.41036 - 162.54037 -6.06157638146

329 162.55036 - 162.70033 -6.23459076714

330 162.71036 - 162.88032 -6.06157638146

331 162.89032 - 163.07037 -6.23459076714

332 163.08036 - 163.26036 -6.06157638146

333 163.27037 - 163.84033 -6.23459076714

334 163.85032 - 164.28036 -6.06157638146

335 164.29037 - 164.59037 -6.23459076714

336 164.60032 - 164.72033 -6.06157638146

337 164.73036 - 165.01031 -6.23459076714

338 165.02033 - 165.22037 -6.06157638146

339 165.2305 - 165.33031 -6.23459076714

340 165.34043 - 165.63031 -6.06157638146

341 165.64037 - 165.82037 -6.23459076714

342 165.83036 - 166.34043 -6.06157638146

343 166.35033 - 166.54037 -5.60727260783

344 166.55032 - 166.56032 -6.06157638146

345 166.57037 - 166.73033 -6.38213861802

346 166.74037 - 166.77037 -6.06157638146

347 166.78032 - 166.97032 -6.23459076714

348 166.98032 - 167.06037 -6.06157638146

349 167.07032 - 167.13037 -6.23459076714

350 167.14037 - 167.18038 -6.06157638146

351 167.19032 - 167.56037 -6.23459076714

352 167.57037 - 167.99032 -6.06157638146

353 168.0006 - 168.29032 -6.23459076714

354 168.30037 - 168.44037 -6.06157638146

355 168.45177 - 168.53033 -6.23459076714

356 168.54033 - 168.61033 -6.06157638146

357 168.62033 - 168.68036 -5.60727260783

358 168.69033 - 168.79036 -6.06157638146

359 168.80032 - 169.03032 -6.23459076714

360 169.04032 - 169.09049 -6.38213861802

361 169.10036 - 169.11037 -6.23459076714

362 169.12031 - 169.13039 -6.06157638146

363 169.14032 - 169.24037 -6.38213861802

364 169.25032 - 169.60037 -6.23459076714

365 169.61033 - 169.71031 -6.06157638146

366 169.72033 - 169.80033 -6.23459076714

367 169.8114 - 169.92033 -6.06157638146

368 169.93033 - 169.95037 -6.23459076714

369 169.96033 - 170.04033 -6.38213861802

370 170.05033 - 170.06134 -6.06157638146

371 170.07033 - 170.28033 -6.23459076714

372 170.29033 - 170.32037 -6.06157638146

373 170.33037 - 170.37033 -6.23459076714

374 170.38033 - 170.42113 -6.06157638146

375 170.43037 - 170.52037 -6.23459076714

376 170.53037 - 170.58036 -6.06157638146

377 170.59041 - 170.65036 -6.23459076714

378 170.66037 - 170.75037 -6.06157638146

379 170.76037 - 170.81133 -6.23459076714

380 170.82032 - 171.04033 -6.06157638146

381 171.05033 - 171.10033 -6.23459076714

382 171.11037 - 171.59048 -6.06157638146

383 171.60037 - 171.61032 -5.60727260783

384 171.62032 - 171.73037 -6.06157638146

385 171.74037 - 171.87033 -6.23459076714

386 171.88031 - 172.37036 -6.38213861802

387 172.38037 - 172.54031 -6.23459076714

388 172.55037 - 172.69033 -6.38213861802

389 172.70037 - 172.74037 -6.23459076714

390 172.75037 - 172.78033 -6.38213861802

391 172.79033 - 172.79033 -5.60727260783

392 172.80045 - 172.92081 -6.38213861802

393 172.93033 - 172.94033 -6.06157638146

394 172.95037 - 172.96031 -5.60727260783

395 172.97033 - 173.14033 -6.06157638146

396 173.15037 - 173.24037 -5.60727260783

397 173.25033 - 173.26033 -6.06157638146

398 173.27033 - 173.35037 -6.23459076714

399 173.36037 - 173.41037 -6.38213861802

400 173.42078 - 173.42078 -5.60727260783

401 173.43031 - 173.54037 -6.38213861802

402 173.55037 - 173.61037 -6.06157638146

403 173.62032 - 173.94037 -6.38213861802

404 173.95037 - 174.01037 -5.60727260783

405 174.02033 - 174.13033 -6.06157638146

406 174.14033 - 174.22033 -6.23459076714

407 174.23051 - 174.26037 -6.06157638146

408 174.27033 - 174.33038 -6.38213861802

409 174.34044 - 174.40037 -6.06157638146

410 174.41037 - 174.48033 -6.23459076714

411 174.49033 - 174.54037 -6.38213861802

412 174.55032 - 174.60037 -6.06157638146

413 174.61056 - 175.01033 -6.23459076714

414 175.02033 - 175.06139 -6.06157638146

415 175.07031 - 175.22037 -6.38213861802

416 175.23055 - 175.23055 -6.06157638146

417 175.24037 - 175.38037 -6.23459076714

418 175.39037 - 175.44037 -6.06157638146

419 175.45183 - 175.48037 -6.23459076714

420 175.49032 - 175.73052 -6.06157638146

421 175.74038 - 175.84037 -6.23459076714

422 175.85036 - 176.09045 -6.06157638146

423 176.10037 - 176.28038 -5.60727260783

424 176.29033 - 176.42033 -6.06157638146

425 176.43033 - 176.56037 -6.23459076714

426 176.57037 - 176.67033 -6.38213861802

427 176.68038 - 176.87032 -6.23459076714

428 176.88037 - 176.91032 -6.06157638146

429 176.92037 - 176.93032 -5.60727260783

430 176.94032 - 176.98037 -6.38213861802

431 176.99032 - 176.99032 -6.06157638146

432 177.00032 - 177.14032 -6.23459076714

433 177.15036 - 177.78065 -6.38213861802

434 177.79036 - 177.81135 -6.06157638146

435 177.82037 - 179.0904 -6.38213861802

436 179.10037 - 179.25081 -6.23459076714

437 179.26037 - 179.44037 -6.38213861802

438 179.45182 - 179.48037 -6.23459076714

439 179.49037 - 179.52038 -6.06157638146

440 179.53037 - 179.74033 -6.38213861802

441 179.75032 - 179.82033 -6.06157638146

442 179.83037 - 179.87032 -6.38213861802

443 179.88038 - 180.26033 -6.23459076714

444 180.27032 - 180.30037 -6.38213861802

445 180.31032 - 180.43032 -6.23459076714

446 180.44037 - 180.44037 -5.60727260783

447 180.45115 - 180.48056 -6.23459076714

448 180.49032 - 180.56133 -6.06157638146

449 180.57032 - 181.31037 -6.23459076714

450 181.32032 - 181.43031 -6.06157638146

451 181.44036 - 181.49033 -6.38213861802

452 181.50032 - 181.57062 -6.23459076714

453 181.58036 - 181.58036 -5.60727260783

454 181.59037 - 182.04037 -6.38213861802

455 182.05037 - 182.05037 -5.60727260783

456 182.0946 - 182.60065 -3.98549588686

457 182.62589 - 182.72033 -5.60727260783

458 182.7647 - 183.22324 -3.98549588686

459 183.24527 - 183.28033 -5.60727260783

460 183.29037 - 183.42112 -3.98549588686

461 183.4469 - 183.85036 -6.38213861802

462 183.86032 - 183.90032 -6.06157638146

463 183.91037 - 183.97032 -6.38213861802

464 183.98053 - 184.00089 -6.06157638146

465 184.01032 - 184.05032 -6.38213861802

466 184.06133 - 184.06133 -5.60727260783

467 184.07032 - 184.16032 -6.38213861802

468 184.17032 - 184.21036 -6.06157638146

469 184.22037 - 184.27032 -6.23459076714

470 184.28037 - 184.30033 -6.06157638146

471 184.31132 - 184.43036 -6.23459076714

472 184.44032 - 184.52032 -6.06157638146

473 184.53032 - 184.62032 -6.38213861802

474 184.63037 - 184.63037 -5.60727260783

475 184.64031 - 184.68032 -6.06157638146

476 184.69032 - 184.82037 -6.23459076714

477 184.83037 - 185.14037 -6.38213861802

478 185.15036 - 185.17037 -6.06157638146

479 185.18032 - 185.21036 -6.23459076714

480 185.22032 - 185.64032 -6.38213861802

481 185.65036 - 185.72037 -6.23459076714

482 185.73036 - 185.94037 -6.38213861802

483 185.95037 - 186.11033 -6.06157638146

484 186.12036 - 186.22032 -6.23459076714

485 186.23033 - 186.26032 -6.06157638146

486 186.27033 - 186.39033 -6.38213861802

487 186.40032 - 186.40032 -6.06157638146

488 186.41037 - 186.45033 -6.23459076714

489 186.46032 - 186.67033 -6.38213861802

490 186.68037 - 186.74037 -5.60727260783

491 186.75037 - 186.95032 -6.23459076714

492 186.96033 - 187.01031 -6.38213861802

493 187.02032 - 187.20032 -6.23459076714

494 187.21032 - 187.28037 -6.06157638146

495 187.29032 - 187.29032 -5.60727260783

496 187.30037 - 187.38037 -6.06157638146

497 187.39032 - 187.48032 -6.23459076714

498 187.49032 - 187.85031 -6.06157638146

499 187.86058 - 187.99037 -6.23459076714

500 188.00032 - 188.12037 -6.38213861802

501 188.13037 - 188.34041 -6.23459076714

502 188.35037 - 188.6906 -6.06157638146

503 188.70109 - 188.70109 -5.60727260783

504 188.71032 - 189.53037 -6.06157638146

505 189.54032 - 189.58036 -6.23459076714

506 189.59033 - 189.60032 -6.06157638146

507 189.61037 - 189.67037 -6.23459076714

508 189.68037 - 189.94032 -6.06157638146

509 189.95033 - 190.09037 -6.23459076714

510 190.10033 - 190.17079 -6.06157638146

511 190.18033 - 190.33038 -6.23459076714

512 190.34032 - 190.36032 -6.06157638146

513 190.37038 - 190.43033 -6.23459076714

514 190.44032 - 190.55037 -6.06157638146

515 190.5614 - 190.59047 -6.23459076714

516 190.60037 - 190.67033 -6.06157638146

517 190.68032 - 190.73038 -5.60727260783

518 190.74037 - 190.78036 -6.06157638146

519 190.79033 - 191.44037 -6.23459076714

520 191.45037 - 191.52037 -6.06157638146

521 191.53033 - 191.59037 -6.38213861802

522 191.60033 - 191.98055 -6.23459076714

523 191.99032 - 192.00077 -6.06157638146

524 192.01033 - 192.15037 -6.23459076714

525 192.16037 - 192.21037 -6.38213861802

526 192.22033 - 192.36033 -6.23459076714

527 192.37033 - 192.40033 -6.06157638146

528 192.41033 - 192.81037 -6.23459076714

529 192.82037 - 192.83033 -6.06157638146

530 192.84033 - 193.22037 -6.23459076714

531 193.23033 - 193.23033 -5.60727260783

532 193.24033 - 193.26033 -6.06157638146

533 193.27033 - 193.38033 -6.23459076714

534 193.39046 - 193.44033 -6.06157638146

535 193.45114 - 193.49037 -6.23459076714

536 193.50033 - 193.53037 -6.06157638146

537 193.54037 - 193.68032 -6.23459076714

538 193.69036 - 193.83033 -6.06157638146

539 193.84032 - 194.55036 -6.23459076714

540 194.56142 - 194.59041 -6.06157638146

541 194.60037 - 194.60037 -5.60727260783

542 194.61032 - 195.57032 -6.23459076714

543 195.58056 - 195.80032 -6.06157638146

544 195.81141 - 196.58057 -6.23459076714

545 196.59032 - 196.63032 -6.38213861802

546 196.64032 - 196.8404 -6.23459076714

547 196.85032 - 196.86037 -6.06157638146

548 196.87032 - 196.95181 -6.23459076714

549 196.96037 - 196.96037 -6.06157638146

550 196.97037 - 197.50032 -6.23459076714

551 197.51032 - 197.53032 -6.38213861802

552 197.54036 - 197.63037 -6.23459076714

553 197.64037 - 197.67088 -6.06157638146

554 197.68031 - 198.24032 -6.23459076714

555 198.25037 - 198.42084 -6.38213861802

556 198.43037 - 198.48032 -6.06157638146

557 198.49032 - 198.65037 -6.23459076714

558 198.66032 - 198.84042 -6.38213861802

559 198.85036 - 198.89032 -6.23459076714

560 198.90032 - 198.97037 -6.06157638146

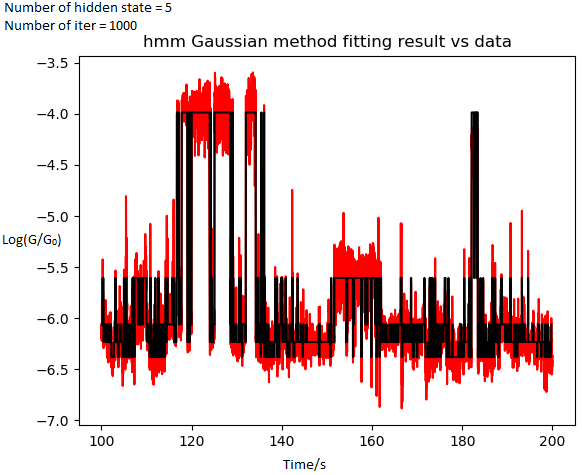
561 198.98051 - 199.47037 -6.38213861802

562 199.48036 - 199.57032 -6.23459076714

563 199.58032 - 199.65037 -6.38213861802

564 199.66037 - 199.74032 -6.23459076714

565 199.7506 - 199.76037 -6.06157638146



n component = 3, n iter = 1000

Current 2

done fitting to HMM

Transition matrix

[[9.84258974e-01 9.52471955e-04 1.47885545e-02]

[6.38811011e-03 9.88946812e-01 4.66507797e-03]

[5.08590317e-02 3.70692946e-03 9.45434039e-01]]

Means and Variance of each hidden state

0th hidden state

mean = [-6.23154044]

variance = [0.01820434]

1th hidden state

mean = [-3.98523656]

variance = [0.03632792]

2th hidden state

mean = [-5.70412243]

variance = [0.0686542]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 100.02037 - 100.15036 -6.23154043723

1 100.16032 - 100.44033 -5.70412242908

2 100.45036 - 100.53055 -6.23154043723

3 100.54037 - 100.62033 -5.70412242908

4 100.63032 - 100.89032 -6.23154043723

5 100.90037 - 100.99032 -5.70412242908

6 101.00033 - 103.08032 -6.23154043723

7 103.09039 - 103.11036 -5.70412242908

8 103.12032 - 104.02032 -6.23154043723

9 104.03032 - 104.05033 -5.70412242908

10 104.06129 - 104.98037 -6.23154043723

11 104.99037 - 105.00037 -5.70412242908

12 105.01037 - 105.38037 -6.23154043723

13 105.39037 - 105.56038 -5.70412242908

14 105.57038 - 105.64081 -6.23154043723

15 105.65033 - 105.70038 -5.70412242908

16 105.71038 - 106.89033 -6.23154043723

17 106.90035 - 107.27033 -5.70412242908

18 107.28038 - 107.32038 -6.23154043723

19 107.33033 - 108.12038 -5.70412242908

20 108.13037 - 108.19037 -6.23154043723

21 108.20033 - 108.54032 -5.70412242908

22 108.55038 - 108.63038 -6.23154043723

23 108.64032 - 109.00037 -5.70412242908

24 109.01033 - 109.22032 -6.23154043723

25 109.23059 - 109.96037 -5.70412242908

26 109.97033 - 110.82032 -6.23154043723

27 110.83037 - 110.96032 -5.70412242908

28 110.97038 - 111.89033 -6.23154043723

29 111.90035 - 111.94033 -5.70412242908

30 111.95174 - 112.64032 -6.23154043723

31 112.65033 - 112.65033 -5.70412242908

32 112.66037 - 113.08033 -6.23154043723

33 113.09037 - 113.11032 -5.70412242908

34 113.12033 - 114.22033 -6.23154043723

35 114.23037 - 114.25032 -5.70412242908

36 114.26038 - 114.47033 -6.23154043723

37 114.48054 - 115.03031 -5.70412242908

38 115.04038 - 115.11032 -6.23154043723

39 115.12033 - 115.17032 -5.70412242908

40 115.18033 - 115.25036 -6.23154043723

41 115.26033 - 115.49033 -5.70412242908

42 115.50032 - 115.60032 -6.23154043723

43 115.61038 - 115.82032 -5.70412242908

44 115.83033 - 115.95037 -6.23154043723

45 115.96037 - 116.02033 -5.70412242908

46 116.03037 - 116.61032 -6.23154043723

47 116.62037 - 116.70178 -5.70412242908

48 116.73447 - 117.16064 -3.98523655546

49 117.1876 - 117.35037 -6.23154043723

50 117.36037 - 117.37036 -5.70412242908

51 117.38032 - 117.75032 -6.23154043723

52 117.79614 - 119.02064 -3.98523655546

53 119.04526 - 119.26037 -6.23154043723

54 119.27037 - 119.27037 -5.70412242908

55 119.30219 - 119.31185 -3.98523655546

56 119.36961 - 119.56125 -6.23154043723

57 119.60467 - 119.61069 -3.98523655546

58 119.63753 - 119.80037 -5.70412242908

59 119.81037 - 119.98032 -6.23154043723

60 120.01762 - 124.0007 -3.98523655546

61 124.02755 - 124.15033 -6.23154043723

62 124.16033 - 124.16033 -5.70412242908

63 124.19051 - 124.26064 -3.98523655546

64 124.28956 - 124.28956 -5.70412242908

65 124.30037 - 124.41033 -6.23154043723

66 124.42033 - 124.48027 -5.70412242908

67 124.51034 - 125.04031 -6.23154043723

68 125.07373 - 128.59069 -3.98523655546

69 128.61956 - 128.64033 -6.23154043723

70 128.65033 - 128.72037 -5.70412242908

71 128.73055 - 128.87032 -6.23154043723

72 128.88037 - 129.02037 -5.70412242908

73 129.03056 - 129.06037 -6.23154043723

74 129.07032 - 129.07032 -5.70412242908

75 129.10139 - 129.14065 -3.98523655546

76 129.16527 - 129.19033 -6.23154043723

77 129.20174 - 129.21033 -5.70412242908

78 129.22033 - 129.77037 -6.23154043723

79 129.78032 - 129.80037 -5.70412242908

80 129.81036 - 130.50033 -6.23154043723

81 130.51036 - 130.53036 -5.70412242908

82 130.54037 - 130.86033 -6.23154043723

83 130.87036 - 130.89032 -5.70412242908

84 130.90037 - 131.23036 -6.23154043723

85 131.24033 - 131.28033 -5.70412242908

86 131.29036 - 131.81132 -6.23154043723

87 131.82032 - 131.91037 -5.70412242908

88 131.92037 - 131.99037 -6.23154043723

89 132.025 - 134.1907 -3.98523655546

90 134.2175 - 134.63037 -6.23154043723

91 134.64037 - 134.80033 -5.70412242908

92 134.81135 - 134.90033 -6.23154043723

93 134.91033 - 134.92037 -5.70412242908

94 134.93038 - 135.46038 -6.23154043723

95 135.47038 - 135.47038 -3.98523655546

96 135.48056 - 135.61038 -6.23154043723

97 135.62033 - 135.65035 -5.70412242908

98 135.66037 - 135.78462 -6.23154043723

99 135.80523 - 135.8404 -5.70412242908

100 135.85033 - 136.02032 -6.23154043723

101 136.05207 - 136.06185 -3.98523655546

102 136.09535 - 136.13037 -6.23154043723

103 136.14037 - 136.14037 -5.70412242908

104 136.15033 - 138.50037 -6.23154043723

105 138.51037 - 138.51037 -5.70412242908

106 138.52037 - 138.91037 -6.23154043723

107 138.92037 - 138.94037 -5.70412242908

108 138.95037 - 139.65032 -6.23154043723

109 139.66033 - 140.11032 -5.70412242908

110 140.12037 - 140.73037 -6.23154043723

111 140.74033 - 140.92037 -5.70412242908

112 140.93037 - 142.26037 -6.23154043723

113 142.27036 - 142.46036 -5.70412242908

114 142.47032 - 143.48037 -6.23154043723

115 143.49037 - 143.51032 -5.70412242908

116 143.52032 - 150.31131 -6.23154043723

117 150.32036 - 150.40037 -5.70412242908

118 150.41037 - 150.93032 -6.23154043723

119 150.94036 - 150.94036 -5.70412242908

120 150.95032 - 151.56032 -6.23154043723

121 151.57036 - 151.57036 -5.70412242908

122 151.58032 - 151.61032 -6.23154043723

123 151.62032 - 154.26033 -5.70412242908

124 154.27037 - 154.30033 -6.23154043723

125 154.3113 - 154.32037 -5.70412242908

126 154.33032 - 154.49037 -6.23154043723

127 154.50032 - 155.75033 -5.70412242908

128 155.76032 - 155.78032 -6.23154043723

129 155.79037 - 157.62033 -5.70412242908

130 157.63038 - 157.70037 -6.23154043723

131 157.71033 - 159.80037 -5.70412242908

132 159.81037 - 159.87036 -6.23154043723

133 159.88036 - 160.95037 -5.70412242908

134 160.96032 - 161.09048 -6.23154043723

135 161.10037 - 161.58032 -5.70412242908

136 161.59048 - 161.63037 -6.23154043723

137 161.64047 - 162.01037 -5.70412242908

138 162.02037 - 166.32037 -6.23154043723

139 166.33033 - 166.55032 -5.70412242908

140 166.56032 - 166.74037 -6.23154043723

141 166.75037 - 166.77037 -5.70412242908

142 166.78032 - 167.72032 -6.23154043723

143 167.73051 - 167.75037 -5.70412242908

144 167.76032 - 168.60037 -6.23154043723

145 168.61033 - 168.71031 -5.70412242908

146 168.72037 - 171.38033 -6.23154043723

147 171.39032 - 171.64032 -5.70412242908

148 171.65036 - 172.78033 -6.23154043723

149 172.79033 - 172.79033 -5.70412242908

150 172.80045 - 172.93033 -6.23154043723

151 172.94033 - 173.05033 -5.70412242908

152 173.06033 - 173.14033 -6.23154043723

153 173.15037 - 173.25033 -5.70412242908

154 173.26033 - 173.94037 -6.23154043723

155 173.95037 - 174.02033 -5.70412242908

156 174.03037 - 175.91033 -6.23154043723

157 175.92033 - 176.34043 -5.70412242908

158 176.35033 - 176.91032 -6.23154043723

159 176.92037 - 176.93032 -5.70412242908

160 176.94032 - 180.43032 -6.23154043723

161 180.44037 - 180.44037 -5.70412242908

162 180.45115 - 181.57062 -6.23154043723

163 181.58036 - 181.58036 -5.70412242908

164 181.59037 - 182.04037 -6.23154043723

165 182.05037 - 182.05037 -5.70412242908

166 182.0946 - 182.60065 -3.98523655546

167 182.62589 - 182.72033 -5.70412242908

168 182.7647 - 183.22324 -3.98523655546

169 183.24527 - 183.28033 -5.70412242908

170 183.29037 - 183.42112 -3.98523655546

171 183.4469 - 184.62032 -6.23154043723

172 184.63037 - 184.64031 -5.70412242908

173 184.65032 - 186.67033 -6.23154043723

174 186.68037 - 186.74037 -5.70412242908

175 186.75037 - 187.28037 -6.23154043723

176 187.29032 - 187.30037 -5.70412242908

177 187.31032 - 188.4208 -6.23154043723

178 188.43037 - 188.53061 -5.70412242908

179 188.54032 - 188.67036 -6.23154043723

180 188.68033 - 188.70109 -5.70412242908

181 188.71032 - 188.89032 -6.23154043723

182 188.90037 - 189.02037 -5.70412242908

183 189.03032 - 189.47032 -6.23154043723

184 189.48057 - 189.50033 -5.70412242908

185 189.51036 - 190.66044 -6.23154043723

186 190.67033 - 190.73038 -5.70412242908

187 190.74037 - 191.48033 -6.23154043723

188 191.49037 - 191.52037 -5.70412242908

189 191.53033 - 193.22037 -6.23154043723

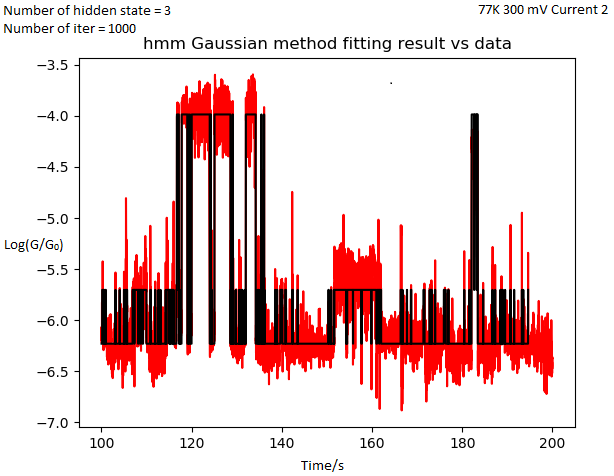
190 193.23033 - 193.23033 -5.70412242908

191 193.24033 - 193.50033 -6.23154043723

192 193.51037 - 193.53037 -5.70412242908

193 193.54037 - 194.59041 -6.23154043723

194 194.60037 - 194.60037 -5.70412242908



n component = 2, n iter = 1000

Current 12

done fitting to HMM

Transition matrix

[[0.99198401 0.00801599]

[0.04110234 0.95889766]]

Means and Variance of each hidden state

0th hidden state

mean = [-6.18205162]

variance = [0.00948708]

1th hidden state

mean = [-5.51393428]

variance = [0.00940223]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 240.02031 - 241.30037 -6.18205161707

1 241.31056 - 241.32037 -5.51393427519

2 241.33037 - 241.35037 -6.18205161707

3 241.36037 - 241.37033 -5.51393427519

4 241.38037 - 242.64037 -6.18205161707

5 242.65037 - 242.65037 -5.51393427519

6 242.66032 - 247.91037 -6.18205161707

7 247.92041 - 247.94032 -5.51393427519

8 247.95031 - 247.95031 -6.18205161707

9 247.96032 - 247.99032 -5.51393427519

10 248.00037 - 249.45033 -6.18205161707

11 249.46033 - 249.47037 -5.51393427519

12 249.48033 - 253.28036 -6.18205161707

13 253.29031 - 254.19032 -5.51393427519

14 254.20033 - 254.29032 -6.18205161707

15 254.30056 - 255.75036 -5.51393427519

16 255.76037 - 255.77032 -6.18205161707

17 255.78033 - 256.79036 -5.51393427519

18 256.80033 - 256.85032 -6.18205161707

19 256.86033 - 256.99032 -5.51393427519

20 257.00099 - 257.02037 -6.18205161707

21 257.03032 - 257.93032 -5.51393427519

22 257.94037 - 257.95036 -6.18205161707

23 257.96037 - 257.98037 -5.51393427519

24 257.99037 - 260.24032 -6.18205161707

25 260.25032 - 260.32032 -5.51393427519

26 260.33032 - 260.39032 -6.18205161707

27 260.40037 - 260.40037 -5.51393427519

28 260.41037 - 265.78036 -6.18205161707

29 265.79036 - 265.80032 -5.51393427519

30 265.81032 - 265.83037 -6.18205161707

31 265.84031 - 265.88032 -5.51393427519

32 265.89037 - 267.58032 -6.18205161707

33 267.59032 - 267.60037 -5.51393427519

34 267.61032 - 267.88032 -6.18205161707

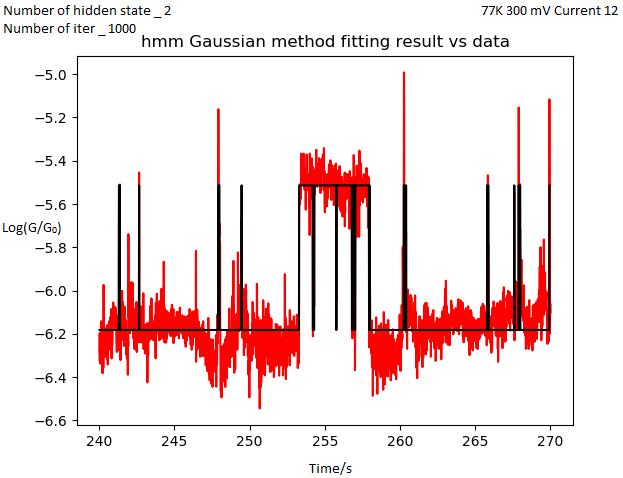
35 267.89032 - 267.90037 -5.51393427519

36 267.91037 - 267.92042 -6.18205161707

37 267.93037 - 267.99032 -5.51393427519

38 268.00072 - 269.92042 -6.18205161707

39 269.93031 - 269.94032 -5.51393427519



n component = 5, n iter = 1000

90K 300 mV Current 8

done fitting to HMM

Transition matrix

[[9.43022995e-001 4.92182811e-004 7.96578906e-163 2.40284187e-002

3.24564032e-002]

[1.67207625e-007 9.78862923e-001 6.31014396e-047 1.97763333e-002

1.36057678e-003]

[0.00000000e+000 3.37861866e-003 9.96621381e-001 0.00000000e+000

0.00000000e+000]

[6.62826217e-002 1.60196016e-002 6.98251383e-004 9.11000714e-001

5.99881181e-003]

[3.62976712e-002 5.19367660e-004 4.73654082e-229 3.54309176e-003

9.59639869e-001]]

Means and Variance of each hidden state

0th hidden state

mean = [-6.39413376]

variance = [0.00404005]

1th hidden state

mean = [-4.87883712]

variance = [0.09427548]

2th hidden state

mean = [-4.11191427]

variance = [0.00883348]

3th hidden state

mean = [-6.23494117]

variance = [0.01686094]

4th hidden state

mean = [-6.51682873]

variance = [0.00666724]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 0.05037 - 0.05037 -6.23494117411

1 0.06037 - 0.72037 -6.39413376117

2 0.73032 - 0.76037 -6.23494117411

3 0.77037 - 1.06033 -6.39413376117

4 1.07037 - 1.13037 -6.23494117411

5 1.14037 - 1.30037 -6.39413376117

6 1.31033 - 1.55109 -6.51682873432

7 1.56037 - 1.68037 -6.39413376117

8 1.69037 - 2.02037 -6.51682873432

9 2.03037 - 2.29033 -6.39413376117

10 2.30037 - 2.54033 -6.51682873432

11 2.55107 - 2.59031 -6.39413376117

12 2.60037 - 2.77037 -6.51682873432

13 2.78037 - 3.12041 -6.39413376117

14 3.13037 - 4.45036 -6.23494117411

15 4.46037 - 4.54033 -6.39413376117

16 4.55032 - 4.63082 -6.23494117411

17 4.64036 - 4.68037 -6.39413376117

18 4.69037 - 4.95032 -6.23494117411

19 4.96033 - 5.09037 -6.39413376117

20 5.10037 - 5.98032 -6.23494117411

21 5.99037 - 5.99037 -4.87883712155

22 6.00036 - 6.43037 -6.23494117411

23 6.44037 - 6.49032 -6.39413376117

24 6.50037 - 7.10033 -6.23494117411

25 7.11032 - 7.27032 -6.39413376117

26 7.28032 - 7.77042 -6.23494117411

27 7.78032 - 8.03038 -6.39413376117

28 8.04037 - 8.08036 -6.23494117411

29 8.09032 - 8.70033 -6.39413376117

30 8.71032 - 8.87031 -6.23494117411

31 8.88032 - 9.10032 -6.39413376117

32 9.11037 - 9.17033 -6.23494117411

33 9.18037 - 9.37033 -6.39413376117

34 9.38036 - 9.41033 -6.23494117411

35 9.42036 - 9.63041 -6.39413376117

36 9.64031 - 10.40033 -6.23494117411

37 10.41037 - 10.51036 -6.39413376117

38 10.52033 - 10.85033 -6.23494117411

39 10.86037 - 10.87032 -4.87883712155

40 10.88037 - 11.66032 -6.23494117411

41 11.67037 - 12.11036 -6.39413376117

42 12.12032 - 12.12032 -6.23494117411

43 12.13037 - 12.36037 -6.39413376117

44 12.37032 - 12.52036 -6.23494117411

45 12.53032 - 14.02037 -6.39413376117

46 14.03036 - 14.08041 -6.51682873432

47 14.09032 - 14.17032 -6.39413376117

48 14.18037 - 14.29037 -6.51682873432

49 14.30037 - 14.51037 -6.39413376117

50 14.52037 - 14.57033 -6.51682873432

51 14.58032 - 14.64036 -6.23494117411

52 14.65078 - 14.67033 -4.87883712155

53 14.68036 - 14.82037 -6.23494117411

54 14.83033 - 14.86032 -6.39413376117

55 14.87037 - 15.51032 -6.51682873432

56 15.52032 - 16.08032 -6.39413376117

57 16.09037 - 16.14036 -6.51682873432

58 16.15037 - 16.30037 -6.39413376117

59 16.31037 - 16.36036 -6.51682873432

60 16.37033 - 16.69037 -6.39413376117

61 16.70037 - 16.79033 -6.23494117411

62 16.80106 - 17.74032 -6.39413376117

63 17.75033 - 17.76037 -4.87883712155

64 17.77033 - 17.77033 -6.23494117411

65 17.78032 - 17.89033 -4.87883712155

66 17.90032 - 17.92032 -6.23494117411

67 17.93033 - 17.94037 -4.87883712155

68 17.95037 - 18.12038 -6.23494117411

69 18.13037 - 18.33032 -6.39413376117

70 18.34037 - 18.51037 -6.23494117411

71 18.52032 - 18.65033 -6.39413376117

72 18.66052 - 18.72032 -6.23494117411

73 18.73038 - 19.08032 -6.39413376117

74 19.09033 - 19.67032 -6.23494117411

75 19.68036 - 19.88077 -6.39413376117

76 19.89033 - 20.07036 -6.23494117411

77 20.08037 - 20.20037 -6.39413376117

78 20.21037 - 20.28033 -6.51682873432

79 20.29032 - 20.29032 -4.87883712155

80 20.30111 - 20.30111 -6.23494117411

81 20.31036 - 20.38033 -6.51682873432

82 20.39036 - 20.48033 -6.23494117411

83 20.49036 - 20.54037 -6.39413376117

84 20.55032 - 20.60033 -6.23494117411

85 20.61036 - 20.69169 -6.39413376117

86 20.70033 - 20.94168 -6.51682873432

87 20.95031 - 21.27033 -6.39413376117

88 21.28032 - 21.34036 -6.51682873432

89 21.35037 - 21.50037 -6.39413376117

90 21.51036 - 21.56032 -6.23494117411

91 21.57037 - 22.10045 -6.39413376117

92 22.11037 - 22.17036 -6.23494117411

93 22.18032 - 22.28036 -6.39413376117

94 22.29032 - 22.31037 -6.51682873432

95 22.32032 - 22.76033 -6.39413376117

96 22.77032 - 22.8304 -6.23494117411

97 22.84037 - 23.15036 -6.39413376117

98 23.16053 - 23.17033 -6.23494117411

99 23.18032 - 23.26032 -6.39413376117

100 23.27037 - 23.29033 -6.23494117411

101 23.30036 - 23.38032 -6.39413376117

102 23.39032 - 23.78037 -6.23494117411

103 23.79037 - 24.36032 -6.39413376117

104 24.37032 - 24.40032 -6.51682873432

105 24.41032 - 25.27037 -6.39413376117

106 25.28032 - 25.36032 -6.51682873432

107 25.37044 - 25.52037 -6.39413376117

108 25.53036 - 25.67032 -6.51682873432

109 25.68037 - 25.99032 -6.39413376117

110 26.00032 - 26.45033 -6.51682873432

111 26.46032 - 26.64037 -6.39413376117

112 26.65037 - 26.69168 -6.23494117411

113 26.70036 - 26.74032 -6.39413376117

114 26.75037 - 26.80114 -6.51682873432

115 26.81033 - 27.72033 -6.39413376117

116 27.73032 - 27.73032 -6.23494117411

117 27.74037 - 27.85036 -6.39413376117

118 27.86032 - 27.95032 -6.51682873432

119 27.96038 - 28.12037 -6.39413376117

120 28.13058 - 28.47032 -6.51682873432

121 28.48037 - 28.67032 -6.39413376117

122 28.68032 - 29.29036 -6.51682873432

123 29.30037 - 29.42033 -6.39413376117

124 29.43032 - 29.90037 -6.51682873432

125 29.91037 - 30.21033 -6.39413376117

126 30.22032 - 30.96032 -6.51682873432

127 30.97046 - 32.01037 -6.39413376117

128 32.02032 - 32.09033 -6.51682873432

129 32.10036 - 32.39032 -6.39413376117

130 32.40037 - 32.46037 -6.51682873432

131 32.47033 - 34.05036 -6.39413376117

132 34.06032 - 34.26037 -6.51682873432

133 34.27032 - 34.82032 -6.39413376117

134 34.83037 - 34.95032 -6.51682873432

135 34.96032 - 35.97032 -6.39413376117

136 35.98032 - 36.01032 -6.23494117411

137 36.02032 - 36.47032 -6.39413376117

138 36.48032 - 36.75032 -6.51682873432

139 36.76031 - 36.91054 -6.39413376117

140 36.92032 - 36.97032 -6.51682873432

141 36.98037 - 37.6606 -6.39413376117

142 37.67036 - 38.32037 -6.51682873432

143 38.33039 - 38.79037 -6.39413376117

144 38.80037 - 38.91059 -6.51682873432

145 38.92037 - 39.01032 -6.39413376117

146 39.02032 - 39.10037 -6.51682873432

147 39.11037 - 39.29032 -6.39413376117

148 39.30113 - 39.44169 -6.51682873432

149 39.45037 - 39.57037 -6.39413376117

150 39.5804 - 39.97032 -6.51682873432

151 39.98032 - 40.84032 -6.39413376117

152 40.85037 - 40.94174 -6.23494117411

153 40.95032 - 41.28032 -6.39413376117

154 41.29032 - 41.37032 -6.51682873432

155 41.38032 - 41.85037 -6.39413376117

156 41.86032 - 42.75032 -6.51682873432

157 42.76037 - 42.93033 -6.39413376117

158 42.94169 - 43.02054 -6.51682873432

159 43.03037 - 43.15037 -6.39413376117

160 43.16037 - 43.58037 -6.51682873432

161 43.59033 - 44.04033 -6.39413376117

162 44.05033 - 46.56038 -6.51682873432

163 46.57033 - 46.75038 -6.39413376117

164 46.76038 - 47.37038 -6.51682873432

165 47.38038 - 47.76033 -6.39413376117

166 47.77036 - 47.92033 -6.51682873432

167 47.93032 - 48.21038 -6.39413376117

168 48.22039 - 51.12038 -6.51682873432

169 51.13036 - 51.31036 -6.39413376117

170 51.32033 - 51.62033 -6.51682873432

171 51.63032 - 51.76033 -6.39413376117

172 51.77036 - 53.37037 -6.51682873432

173 53.38032 - 53.40032 -6.23494117411

174 53.41037 - 53.50031 -6.39413376117

175 53.51033 - 53.77037 -6.51682873432

176 53.78032 - 53.79037 -6.23494117411

177 53.80114 - 53.80114 -4.87883712155

178 53.81037 - 53.81037 -6.23494117411

179 53.82032 - 53.89033 -6.39413376117

180 53.90032 - 54.00032 -6.23494117411

181 54.01036 - 54.02036 -4.87883712155

182 54.03037 - 54.08037 -6.23494117411

183 54.09032 - 54.10037 -6.39413376117

184 54.11037 - 54.41032 -6.51682873432

185 54.42032 - 54.53037 -6.39413376117

186 54.54037 - 54.62032 -6.51682873432

187 54.63037 - 55.27032 -6.39413376117

188 55.28036 - 55.35032 -6.23494117411

189 55.36036 - 55.42031 -6.39413376117

190 55.43032 - 55.51037 -6.23494117411

191 55.52036 - 55.5804 -6.39413376117

192 55.59033 - 55.60032 -6.23494117411

193 55.61037 - 55.65032 -6.39413376117

194 55.66055 - 55.73037 -6.23494117411

195 55.74037 - 55.82032 -6.39413376117

196 55.83046 - 56.07032 -6.23494117411

197 56.08037 - 56.13037 -6.39413376117

198 56.14032 - 56.21032 -6.23494117411

199 56.22046 - 56.39037 -6.51682873432

200 56.40032 - 56.44032 -6.39413376117

201 56.45032 - 56.59032 -6.23494117411

202 56.60032 - 56.60032 -6.39413376117

203 56.61037 - 56.63036 -6.51682873432

204 56.64032 - 56.66037 -6.39413376117

205 56.67036 - 56.67036 -6.23494117411

206 56.68037 - 56.81037 -6.51682873432

207 56.82037 - 56.85032 -6.39413376117

208 56.86032 - 57.02032 -6.23494117411

209 57.03037 - 57.24037 -6.51682873432

210 57.25032 - 57.33046 -6.39413376117

211 57.34036 - 57.56032 -6.51682873432

212 57.57038 - 57.58037 -6.23494117411

213 57.59037 - 57.61032 -6.39413376117

214 57.62033 - 57.70033 -6.51682873432

215 57.71033 - 57.75032 -4.87883712155

216 57.76033 - 57.81033 -6.23494117411

217 57.82037 - 57.86036 -6.39413376117

218 57.87032 - 58.04032 -6.23494117411

219 58.05116 - 58.22032 -6.39413376117

220 58.23033 - 58.31037 -6.51682873432

221 58.32032 - 58.48032 -6.39413376117

222 58.49033 - 58.64037 -6.51682873432

223 58.65037 - 58.86037 -6.39413376117

224 58.87036 - 59.01031 -6.51682873432

225 59.02032 - 59.03032 -6.23494117411

226 59.04037 - 59.13033 -6.39413376117

227 59.14036 - 59.24032 -6.51682873432

228 59.25037 - 59.36032 -6.39413376117

229 59.37033 - 59.42031 -6.51682873432

230 59.43032 - 59.44168 -6.39413376117

231 59.45032 - 59.47032 -6.23494117411

232 59.48032 - 59.54037 -6.51682873432

233 59.55032 - 59.64032 -6.39413376117

234 59.65032 - 59.82037 -6.23494117411

235 59.8304 - 60.35033 -6.39413376117

236 60.36033 - 60.37033 -6.51682873432

237 60.38037 - 60.89033 -6.39413376117

238 60.90032 - 61.39036 -6.23494117411

239 61.40032 - 61.63037 -6.39413376117

240 61.64032 - 61.70036 -6.51682873432

241 61.71032 - 61.77032 -6.23494117411

242 61.78037 - 61.95032 -6.39413376117

243 61.96037 - 62.11037 -6.23494117411

244 62.12037 - 62.13036 -6.39413376117

245 62.14033 - 64.67037 -6.51682873432

246 64.68037 - 64.70037 -6.23494117411

247 64.71037 - 66.31036 -6.51682873432

248 66.32033 - 66.52032 -6.39413376117

249 66.53037 - 66.66032 -6.51682873432

250 66.67033 - 67.20036 -6.39413376117

251 67.21037 - 67.26032 -6.51682873432

252 67.27037 - 67.35033 -6.39413376117

253 67.36032 - 67.81037 -6.51682873432

254 67.82036 - 67.90036 -6.39413376117

255 67.91031 - 67.91031 -6.23494117411

256 67.92032 - 67.92032 -4.87883712155

257 67.93032 - 67.9417 -6.23494117411

258 67.95031 - 68.09036 -6.39413376117

259 68.10033 - 68.61032 -6.51682873432

260 68.62036 - 68.71037 -6.23494117411

261 68.72032 - 69.13037 -6.39413376117

262 69.14036 - 69.28032 -6.51682873432

263 69.29033 - 69.48032 -6.39413376117

264 69.49033 - 69.57033 -6.51682873432

265 69.58036 - 70.18037 -6.39413376117

266 70.19033 - 70.21037 -6.23494117411

267 70.22037 - 70.28031 -6.39413376117

268 70.29033 - 70.32032 -6.23494117411

269 70.33037 - 70.33037 -4.87883712155

270 70.34036 - 70.34036 -6.23494117411

271 70.35037 - 70.46036 -6.39413376117

272 70.47036 - 70.57032 -6.23494117411

273 70.58048 - 70.59032 -6.39413376117

274 70.60033 - 70.66037 -6.51682873432

275 70.67036 - 70.73037 -6.39413376117

276 70.74032 - 70.84037 -4.87883712155

277 70.85032 - 70.90032 -6.23494117411

278 70.91059 - 70.93032 -4.87883712155

279 70.94032 - 71.22037 -6.23494117411

280 71.23036 - 71.26033 -6.51682873432

281 71.27032 - 71.29032 -6.39413376117

282 71.30123 - 71.31031 -6.23494117411

283 71.32037 - 71.39033 -6.39413376117

284 71.40032 - 72.24033 -6.51682873432

285 72.25033 - 72.26031 -6.23494117411

286 72.27032 - 72.3011 -6.39413376117

287 72.31037 - 73.06037 -6.51682873432

288 73.07037 - 73.26037 -6.39413376117

289 73.27037 - 73.38032 -6.51682873432

290 73.39033 - 73.67037 -6.39413376117

291 73.68046 - 73.84032 -6.23494117411

292 73.85032 - 74.08041 -6.39413376117

293 74.09032 - 74.49037 -6.23494117411

294 74.50037 - 75.73036 -6.39413376117

295 75.74033 - 75.75036 -6.23494117411

296 75.76038 - 75.80033 -4.87883712155

297 75.81031 - 75.81031 -6.23494117411

298 75.82033 - 75.82033 -4.87883712155

299 75.83032 - 75.88037 -6.23494117411

300 75.89031 - 75.90033 -4.87883712155

301 75.91059 - 75.92038 -6.23494117411

302 75.93036 - 78.71045 -4.87883712155

303 78.72033 - 78.75033 -6.23494117411

304 78.76037 - 80.12032 -4.87883712155

305 80.13033 - 80.19172 -6.23494117411

306 80.20036 - 80.26031 -4.87883712155

307 80.27076 - 80.27076 -6.23494117411

308 80.28033 - 88.45038 -4.87883712155

309 88.46037 - 88.51032 -6.23494117411

310 88.52055 - 88.53033 -4.87883712155

311 88.54045 - 88.59033 -6.23494117411

312 88.60036 - 88.75033 -6.39413376117

313 88.76036 - 88.84032 -6.23494117411

314 88.85033 - 88.85033 -4.87883712155

315 88.86036 - 88.90031 -6.23494117411

316 88.9447 - 91.95069 -4.11191426595

317 91.96208 - 92.00533 -4.87883712155

318 92.01037 - 92.05037 -6.23494117411

319 92.06036 - 92.11037 -4.87883712155

320 92.12037 - 92.27033 -6.23494117411

321 92.28032 - 92.30113 -4.87883712155

322 92.31033 - 92.62037 -6.51682873432

323 92.63036 - 92.70032 -6.39413376117

324 92.71032 - 92.95036 -6.51682873432

325 92.96033 - 93.09031 -6.23494117411

326 93.10038 - 93.17036 -6.39413376117

327 93.18037 - 93.37036 -6.51682873432

328 93.38038 - 93.39036 -6.23494117411

329 93.40038 - 93.40038 -4.87883712155

330 93.41036 - 93.42033 -6.23494117411

331 93.43031 - 93.44172 -6.39413376117

332 93.45036 - 95.97037 -6.51682873432

333 95.98032 - 96.11033 -6.39413376117

334 96.12033 - 96.34037 -6.51682873432

335 96.35037 - 96.54032 -6.39413376117

336 96.55037 - 96.59037 -6.51682873432

337 96.6004 - 96.73038 -6.39413376117

338 96.74032 - 96.79033 -6.23494117411

339 96.80111 - 96.83049 -6.39413376117

340 96.84032 - 96.96032 -6.51682873432

341 96.97037 - 96.98037 -6.23494117411

342 96.99056 - 97.00037 -6.39413376117

343 97.01037 - 97.99037 -6.51682873432

344 98.00032 - 98.38037 -6.39413376117

345 98.39032 - 98.60037 -6.23494117411

346 98.61037 - 99.22032 -6.39413376117

347 99.23037 - 99.37033 -6.23494117411

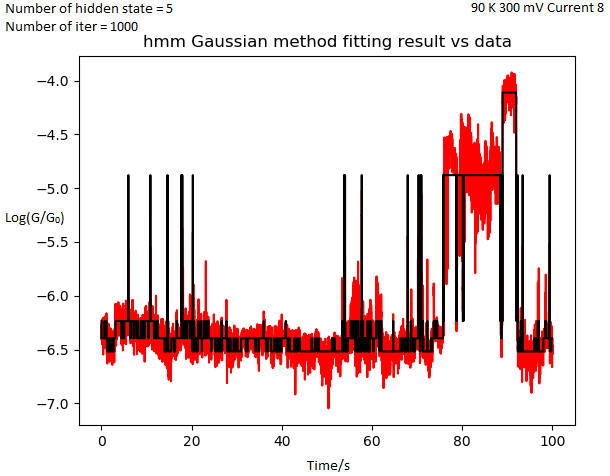
348 99.38032 - 99.38032 -4.87883712155

349 99.39033 - 99.47049 -6.51682873432

350 99.48032 - 99.66036 -6.39413376117

351 99.67038 - 99.76032 -6.51682873432

352 99.77037 - 99.90033 -6.39413376117



n component = 2, n iter = 1000

90K 300 mV Current 10 (0 to 27s)

done fitting to HMM

Transition matrix

[[0.99558561 0.00441439]

[0.00734459 0.99265541]]

Means and Variance of each hidden state

0th hidden state

mean = [-5.86982027]

variance = [0.01494534]

1th hidden state

mean = [-4.73273568]

variance = [0.05718628]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 0.05037 - 8.69033 -5.8698202658

1 8.70037 - 13.87037 -4.73273568229

2 13.88032 - 19.47032 -5.8698202658

3 19.48032 - 20.64037 -4.73273568229

4 20.65032 - 20.67032 -5.8698202658

5 20.68032 - 20.71037 -4.73273568229

6 20.72037 - 23.26037 -5.8698202658

7 23.27032 - 26.15032 -4.73273568229

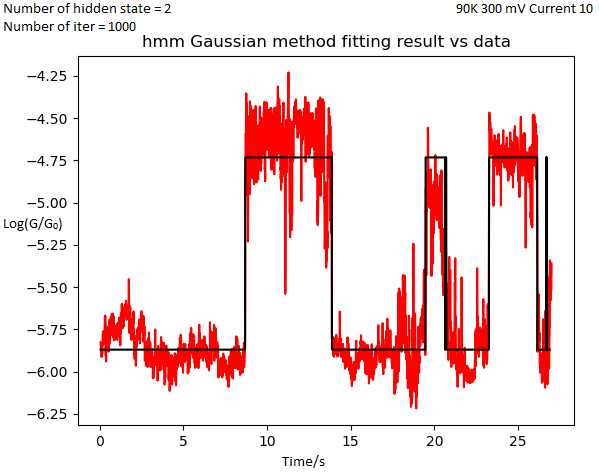
8 26.16032 - 26.68031 -5.8698202658

9 26.69036 - 26.69036 -4.73273568229

10 26.70033 - 26.71032 -5.8698202658

11 26.72037 - 26.73032 -4.73273568229

12 26.74032 - 26.90037 -5.8698202658

****

n component = 4, n iter = 1000

90K 300 mV Current 10 (70 to 80s)

done fitting to HMM

Transition matrix

[[0.87899284 0.06238439 0.00386655 0.05475621]

[0.07632991 0.9142483 0.00424242 0.00517937]

[0.02136816 0.02086921 0.88273443 0.07502821]

[0.1229646 0.00330541 0.06480725 0.80892274]]

Means and Variance of each hidden state

0th hidden state

mean = [-5.94593201]

variance = [0.00159304]

1th hidden state

mean = [-6.0147808]

variance = [0.0029044]

2th hidden state

mean = [-5.43914128]

variance = [0.05837712]

3th hidden state

mean = [-5.83528593]

variance = [0.00402111]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 70.01032 - 70.15032 -5.94593201357

1 70.16046 - 70.19032 -5.83528593029

2 70.20037 - 70.31052 -5.94593201357

3 70.32033 - 70.39037 -6.01478080145

4 70.40037 - 70.61032 -5.94593201357

5 70.62032 - 70.63032 -5.83528593029

6 70.64032 - 70.68032 -5.43914127942

7 70.69032 - 70.70032 -5.83528593029

8 70.71037 - 70.85032 -5.43914127942

9 70.86037 - 70.90033 -5.83528593029

10 70.91036 - 70.93032 -5.43914127942

11 70.94057 - 71.00033 -5.94593201357

12 71.01032 - 71.02033 -5.83528593029

13 71.03036 - 71.03036 -5.43914127942

14 71.04033 - 71.07036 -5.83528593029

15 71.08032 - 71.20032 -5.94593201357

16 71.21032 - 71.22032 -5.83528593029

17 71.23032 - 72.22038 -5.94593201357

18 72.23038 - 72.29038 -5.83528593029

19 72.30036 - 72.37033 -5.94593201357

20 72.38036 - 72.60036 -6.01478080145

21 72.61058 - 72.64038 -5.94593201357

22 72.65036 - 72.66033 -5.83528593029

23 72.67033 - 72.89145 -5.94593201357

24 72.90033 - 72.93038 -6.01478080145

25 72.94038 - 73.21038 -5.94593201357

26 73.22038 - 73.25038 -5.83528593029

27 73.26033 - 73.37031 -5.94593201357

28 73.38037 - 73.52033 -5.83528593029

29 73.53032 - 73.57036 -5.94593201357

30 73.58033 - 73.69036 -5.83528593029

31 73.70033 - 73.71036 -5.94593201357

32 73.72046 - 73.77032 -5.83528593029

33 73.78115 - 73.78115 -5.94593201357

34 73.79032 - 74.07037 -6.01478080145

35 74.08037 - 74.09037 -5.94593201357

36 74.10033 - 74.11033 -5.83528593029

37 74.12033 - 74.14033 -5.94593201357

38 74.15033 - 74.21037 -6.01478080145

39 74.22033 - 74.36033 -5.94593201357

40 74.37032 - 74.71033 -6.01478080145

41 74.72033 - 74.79033 -5.94593201357

42 74.80037 - 74.83037 -5.83528593029

43 74.84033 - 74.85037 -5.94593201357

44 74.86037 - 74.89037 -5.83528593029

45 74.90038 - 74.91032 -5.94593201357

46 74.92045 - 75.22033 -6.01478080145

47 75.23037 - 75.52033 -5.43914127942

48 75.53116 - 75.56033 -5.94593201357

49 75.57037 - 75.58033 -5.83528593029

50 75.59037 - 75.71037 -5.94593201357

51 75.72037 - 75.90032 -6.01478080145

52 75.91037 - 75.97033 -5.83528593029

53 75.98037 - 76.19032 -5.43914127942

54 76.20037 - 76.29037 -5.83528593029

55 76.30033 - 76.38033 -5.43914127942

56 76.39037 - 76.42043 -5.83528593029

57 76.43036 - 76.43036 -5.43914127942

58 76.44033 - 76.53037 -5.83528593029

59 76.54032 - 76.63037 -5.94593201357

60 76.64032 - 76.70032 -6.01478080145

61 76.71033 - 76.72032 -5.94593201357

62 76.73038 - 76.83033 -5.83528593029

63 76.84037 - 76.88032 -5.94593201357

64 76.89038 - 77.19033 -6.01478080145

65 77.20036 - 77.26036 -5.94593201357

66 77.27032 - 77.29038 -5.83528593029

67 77.30036 - 77.30036 -5.94593201357

68 77.31033 - 77.32036 -6.01478080145

69 77.33037 - 77.34032 -5.94593201357

70 77.35033 - 77.37033 -5.83528593029

71 77.38036 - 77.3914 -5.43914127942

72 77.40032 - 77.61033 -5.83528593029

73 77.62031 - 77.80036 -5.94593201357

74 77.81057 - 78.04037 -6.01478080145

75 78.05032 - 78.34037 -5.94593201357

76 78.35032 - 78.46033 -6.01478080145

77 78.47032 - 78.54032 -5.94593201357

78 78.55036 - 78.62033 -6.01478080145

79 78.63031 - 78.69037 -5.94593201357

80 78.70033 - 78.81032 -6.01478080145

81 78.82032 - 78.92033 -5.43914127942

82 78.93037 - 79.19032 -6.01478080145

83 79.20033 - 79.32036 -5.94593201357

84 79.33037 - 79.35033 -5.43914127942

85 79.36032 - 79.38037 -5.83528593029

86 79.39139 - 79.39139 -5.43914127942

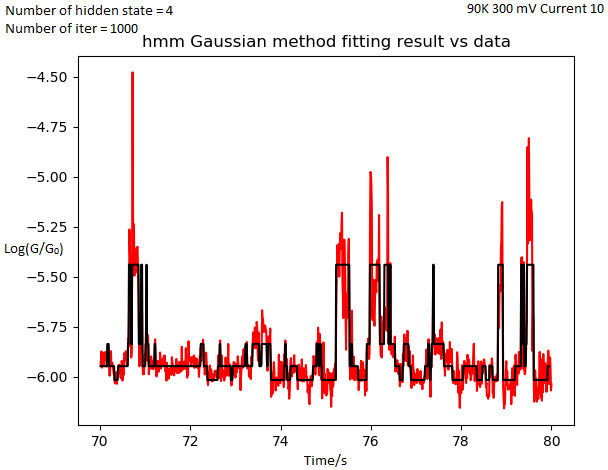
87 79.40033 - 79.43032 -5.94593201357

88 79.44033 - 79.45037 -5.83528593029

89 79.46037 - 79.60031 -5.43914127942

90 79.61033 - 79.91037 -6.01478080145

91 79.92032 - 79.94032 -5.94593201357



n component = 2, n iter = 1000

90K 300 mV Current 10 (70 to 80s)

done fitting to HMM

Transition matrix

[[0.98473154 0.01526846]

[0.06820003 0.93179997]]

Means and Variance of each hidden state

0th hidden state

mean = [-5.96103887]

variance = [0.00472524]

1th hidden state

mean = [-5.56765192]

variance = [0.06966272]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 70.01032 - 70.63032 -5.96103886777

1 70.64032 - 70.93032 -5.56765192449

2 70.94057 - 71.01032 -5.96103886777

3 71.02033 - 71.03036 -5.56765192449

4 71.04033 - 73.38037 -5.96103886777

5 73.3914 - 73.48038 -5.56765192449

6 73.49036 - 73.58033 -5.96103886777

7 73.59032 - 73.77032 -5.56765192449

8 73.78115 - 75.22033 -5.96103886777

9 75.23037 - 75.52033 -5.56765192449

10 75.53116 - 75.56033 -5.96103886777

11 75.57037 - 75.58033 -5.56765192449

12 75.59037 - 75.97033 -5.96103886777

13 75.98037 - 76.43036 -5.56765192449

14 76.44033 - 77.36032 -5.96103886777

15 77.37033 - 77.41038 -5.56765192449

16 77.42042 - 78.81032 -5.96103886777

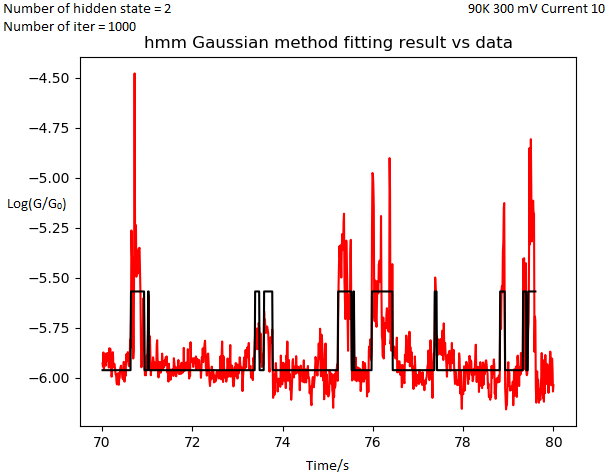
17 78.82032 - 78.92033 -5.56765192449

18 78.93037 - 79.32036 -5.96103886777

19 79.33037 - 79.39139 -5.56765192449

20 79.40033 - 79.43032 -5.96103886777

21 79.44033 - 79.60031 -5.56765192449



n component = 2, n iter = 1000

110K 300 mV Current 6 (180 to 210s)

done fitting to HMM

Transition matrix

[[0.99836578 0.00163422]

[0.00463945 0.99536055]]

Means and Variance of each hidden state

0th hidden state

mean = [-5.32995771]

variance = [0.0030467]

1th hidden state

mean = [-4.50925273]

variance = [0.02756197]

Record of all hidden state

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

No. TIME Start - TIME End VALUE

0 180.02037 - 192.15032 -5.32995770922

1 192.16033 - 200.44069 -4.50925273352

2 200.46527 - 207.46032 -5.32995770922

3 207.47037 - 207.50037 -4.50925273352

4 207.51032 - 207.80031 -5.32995770922

5 207.81037 - 207.82096 -4.50925273352

