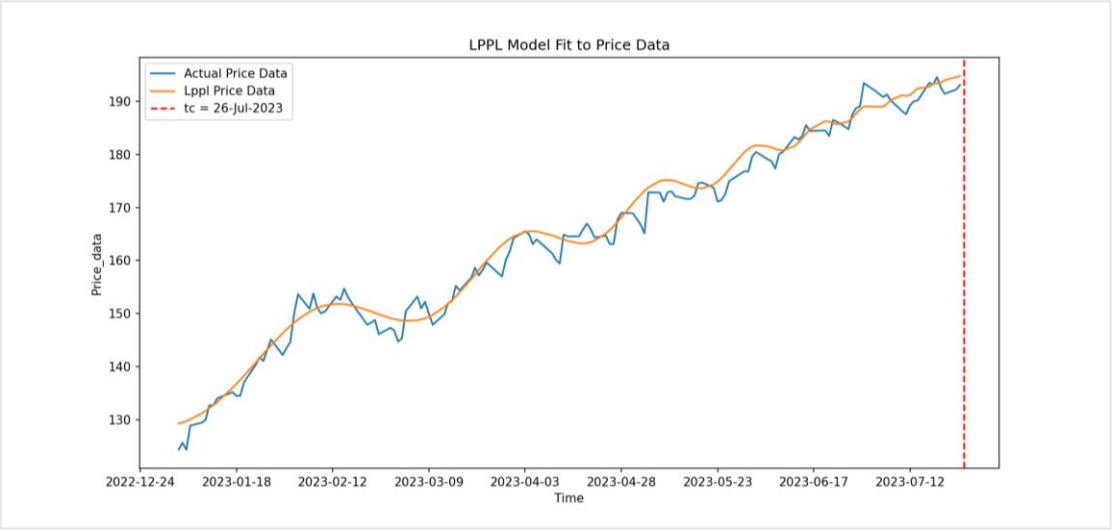
1. Parameters for the genetic algorithm
   - ✧ N = 10000
   - ✧ G = 50
   - ✧ survive_rate = 0.99
   - ✧ mutation_rate = 0.001

2. Find the optimal LPPL parameters, suppose tc in given range
   - ✧ Tc = 207
   - ✧ Beta = 1.14
   - ✧ Omega = 17
   - ✧ Phi = 3.96
   - ✧ A = 5.27255802
   - ✧ B = [-0.00084938]
   - ✧ C = [0.12842314]

3. Plot the synthetic signals and real time-series data with different colors in a figure



LPPL 模型預估計的價格走勢，我畫出許多條線，並在其中選擇一個最貼合現實情況的模型，而這個模型當中可以精確地知道泡沫破裂的時間。

A 崩盤時的最高價格，B 整體線條走勢，C 整體線條在小週期中震盪的幅度，他導致了線條不是直線上升，而是有波動。

4. Calculate the mean squared error between your model and real data
   - ✧ MES = 6.258190437874553