Define the function that convert numbers to the format in file names

In[1]:=
```
number2Printed[number_] := Module[{returnedString = "e", foo, bar, idx, oom},
                                  模組
  If[number == 1, Return["1.0e+00"], If[number == 0, Return["0.0e+00"],
  如果              返回                 如果              返回
    If[number < 1,
    如果
      For[idx = 1, StringLength[returnedString] == 1, idx = idx + 1,
      For迴圈       字串長度
       foo = Floor[number / 10^(-idx)];
             弱取整
       If[foo == 0, ,
       如果
        bar = Round[(number - foo * 10^(-idx)) / 10^(-idx - 1)];
              捨入
        If[StringLength[ToString[idx]] == 1,
        ··· 字串長度          轉換成字串
          returnedString = StringJoin[ToString[foo],
                                      字串結合      轉換成字串
            ".", ToString[bar], returnedString, "-0", ToString[idx]],
                 轉換成字串                                轉換成字串
          returnedString = StringJoin[ToString[foo], ".", ToString[bar],
                                      字串結合      轉換成字串              轉換成字串
            returnedString, "-", ToString[idx]]
                                           轉換成字串
        ]
       ]
      ];
      Return[returnedString]
      返回

      ,
      oom = (StringLength[ToString[DecimalForm[Floor[number] * 1.]]] - 2);
             字串長度          轉換成字串 十進位形式      弱取整
      foo = Floor[number / 10^oom];
             弱取整
      bar = Round[(number - foo * 10^oom) / 10^(oom - 1)];
             捨入
      If[StringLength[ToString[oom]] == 1,
      ··· 字串長度          轉換成字串
        returnedString = StringJoin[ToString[foo],
                                    字串結合      轉換成字串
          ".", ToString[bar], returnedString, "+0", ToString[oom]],
               轉換成字串                                轉換成字串
```

```
        returnedString = StringJoin[ToString[foo], ".", ToString[bar],
                         字串結合    轉換成字串          轉換成字串
          returnedString, "+", ToString[oom]]
                               轉換成字串
        ];
        Return[returnedString]
        返回
       ];
     ]
    ]
   ]
```

Import parameters

In[2]:=
```
combinedParameters = Interpreter[DelimitedSequence["Number", {"[", ", ", "]"}]][
                     解譯器      分隔序列                數
  Import[StringJoin[NotebookDirectory[], "combined_parameters.txt"]]];
  導入   字串結合   筆記本目錄
sequenceLengths = Interpreter[DelimitedSequence["Number", {"[", ", ", "]"}]][
                  解譯器      分隔序列                數
  Import[StringJoin[NotebookDirectory[], "sequence_lengths.txt"]]];
  導入   字串結合   筆記本目錄
populationSizes = Interpreter[DelimitedSequence["Number", {"[", ", ", "]"}]][
                  解譯器      分隔序列                數
  Import[StringJoin[NotebookDirectory[], "population_sizes.txt"]]];
         字串結合   筆記本目錄
```

Import data

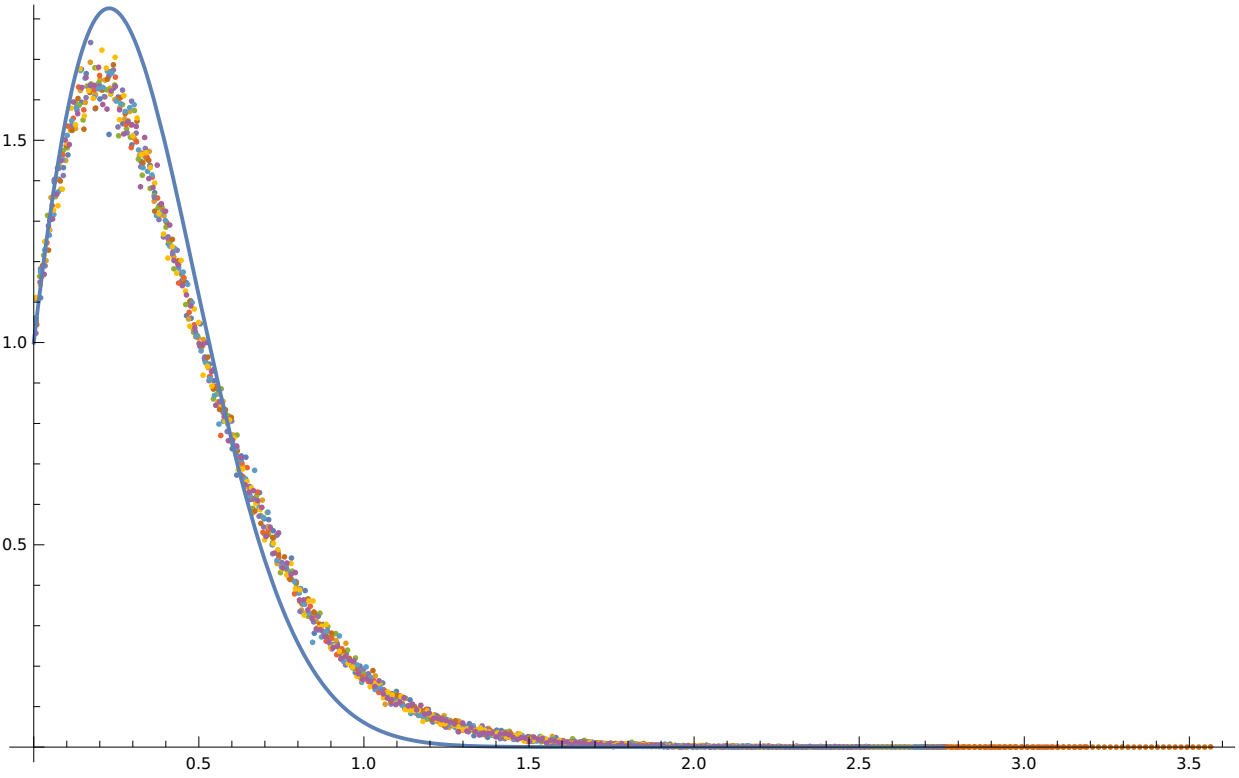
In[5]:=
```
histograms = Table[Table[Table[Transpose[
             表格  表格  表格  轉置
    Interpreter[
    解譯器
      DelimitedSequence[DelimitedSequence["Number", {"[", ", ", "]"}], {"[", ", ", "]"}]][
      分隔序列          分隔序列                數
     Import[StringJoin[NotebookDirectory[], number2Printed[combinedParameters[[idx1]]],
     導入   字串結合   筆記本目錄
       "_", number2Printed[sequenceLengths[[idx2]]], "_",
       number2Printed[populationSizes[[idx3]]], ".txt"]]
   ], {idx3, Length[populationSizes]}], {idx2, Length[sequenceLengths]}],
            長度                                長度
  {idx1, Length[combinedParameters]}];
         長度
```

Plot the data and the prediction

In[6]:=
```
prediction[tau_, combinedParameter_] :=
  (combinedParameter * tau + 1) * Exp[-combinedParameter * tau^2 / 2 - tau];
```
指數形式

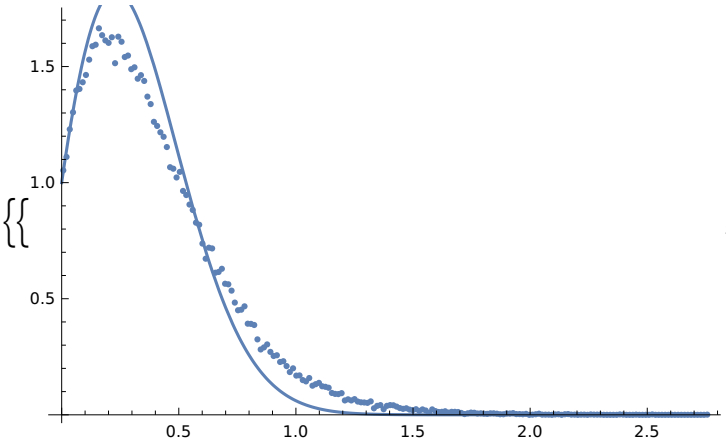
In[7]:=
```
With[{idx0 = 6}, Show[ListPlot[
```
同一起 顯示 點集圖
```
  Flatten[Table[Table[histograms[[idx0, idx1, idx2]], {idx2, Length[populationSizes]}],
```
壓平 表格 表格 長度
```
    {idx1, Length[sequenceLengths]}], 1], ImageSize → Full, PlotRange → All],
```
長度 影像尺寸 全範圍 繪製範圍 全部
```
 Plot[prediction[tau, combinedParameters[[idx0]]], {tau, 0,
```
繪圖
```
   Transpose[Max[histograms[[idx0, 1, 1]]]][[1]]}, PlotRange → All, PlotStyle → Thick]]]
```
轉置 最大值 繪製範圍 全部 繪製樣式 厚

Out[7]=

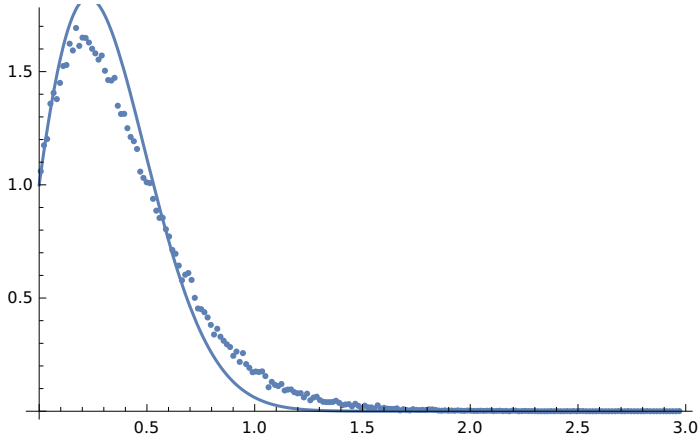


In[8]:=
```
With[{idx0 = 6}, Table[Table[
 Show[ListPlot[histograms[[idx0, idx1, idx2]], ImageSize → Medium, PlotRange → All], Plot[
  (combinedParameters[[idx0]] * tau + 1) Exp[-combinedParameters[[idx0]] / 2 * tau^2 - tau],
  {tau, 0, Transpose[Max[histograms[[idx0, 1, 1]]]][[1]]}, PlotRange → All]],
 {idx2, Length[populationSizes]}], {idx1, Length[sequenceLengths]}]]
```
同一起 表格 表格 顯示 點集圖 影像尺寸 中等 繪製範圍 全部 繪圖 指數形式 轉置 最大值 繪製範圍 全部 長度 長度

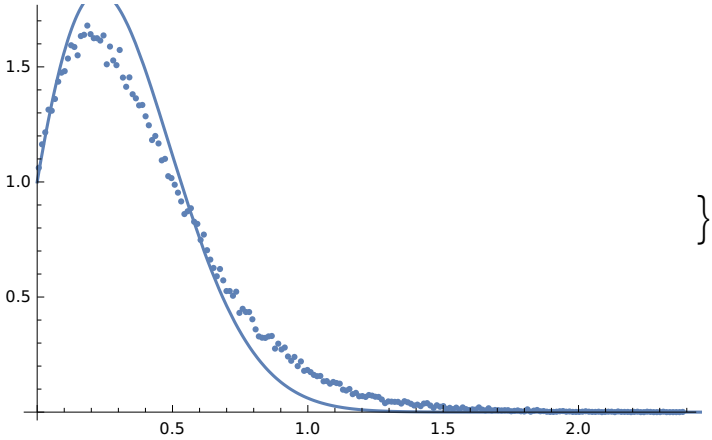
Out[8]=



,

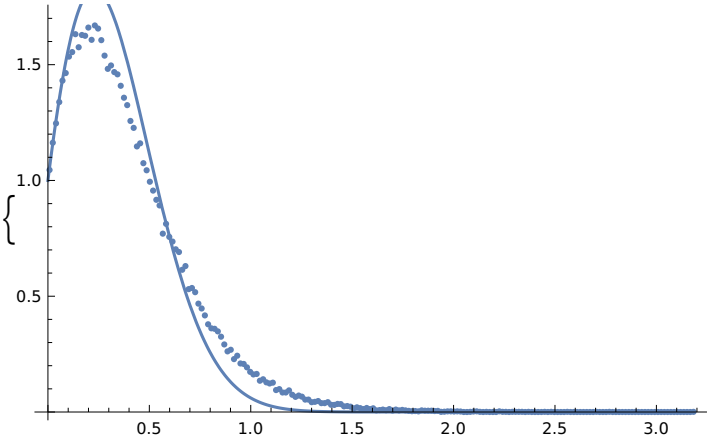


,

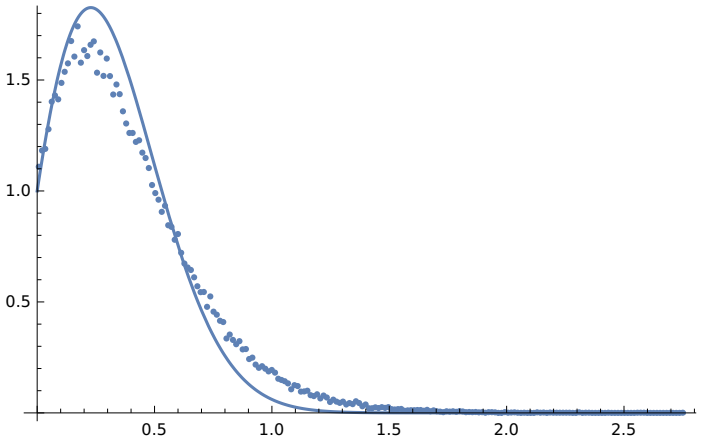

1.5
1.0
0.5
0.5
1.0
1.5
2.0

},

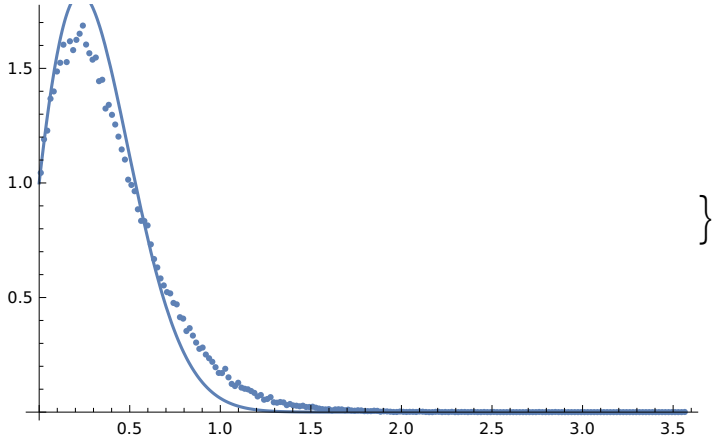
{


1.5
1.0
0.5
0.5
1.0
1.5
2.0
2.5
3.0

,

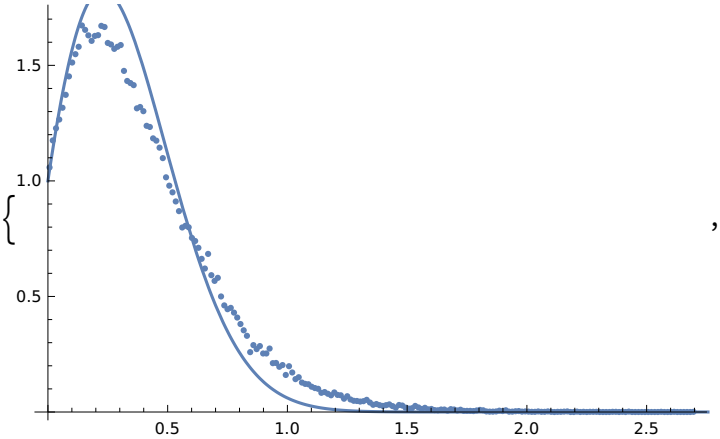

1.5
1.0
0.5
0.5
1.0
1.5
2.0
2.5

,

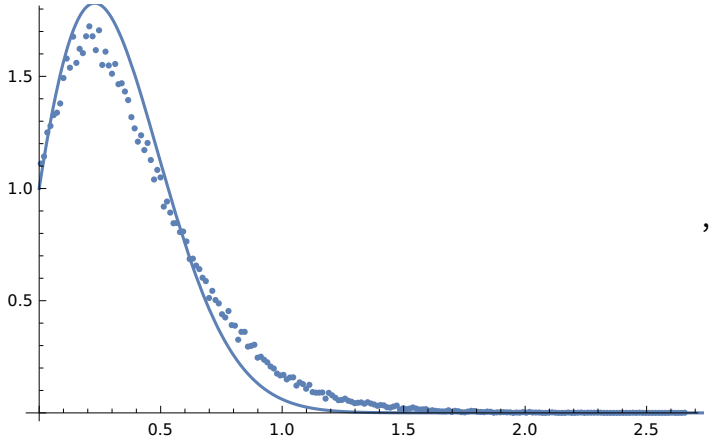

1.5
1.0
0.5
0.5
1.0
1.5
2.0
2.5
3.0
3.5

},

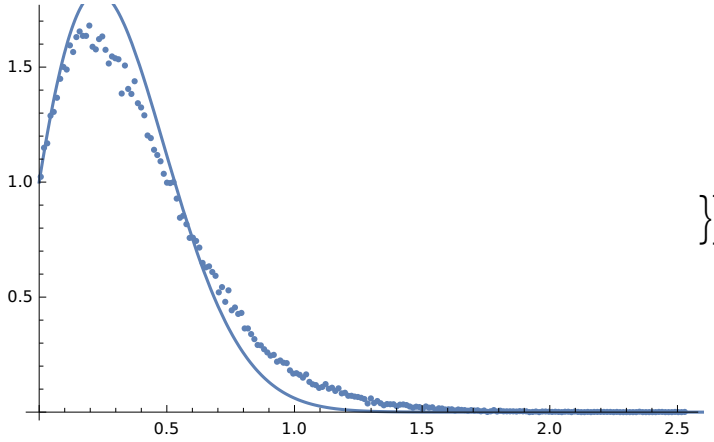
{


1.5
1.0
0.5
0.5
1.0
1.5
2.0
2.5

,


1.5
1.0
0.5
0.5
1.0
1.5
2.0
2.5

,



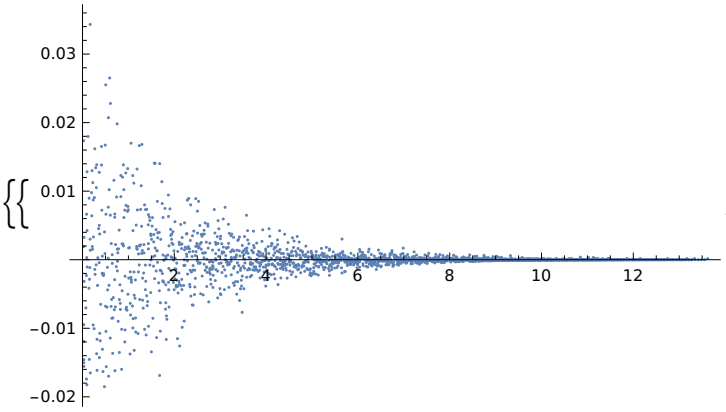
}}

Plot the errors

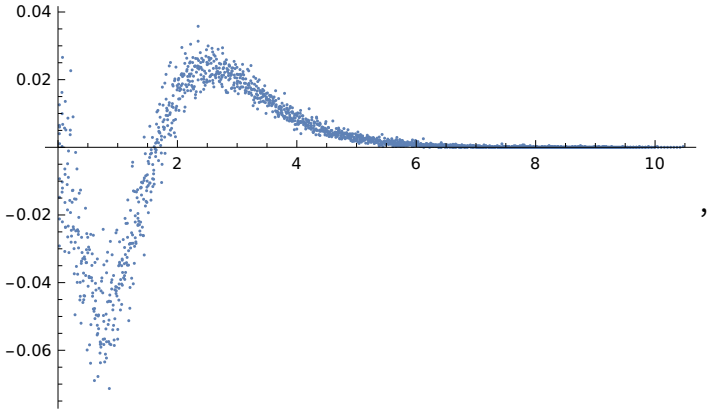
In[9]:=
```
errors = Table[
          表格
  Flatten[Table[Table[histograms[[idx0, idx1, idx2]], {idx2, Length[populationSizes]}],
  壓平      表格  表格                                  長度
    {idx1, Length[sequenceLengths]}], 2], {idx0, Length[combinedParameters]}];
           長度                                 長度
Do[Do[errors[[idx0, idx1]] = {errors[[idx0, idx1, 1]],
…  Do迴圈
   errors[[idx0, idx1, 2]] - prediction[errors[[idx0, idx1, 1]], combinedParameters[[idx0]]]},
 {idx1, Length[errors[[idx0]]]}, {idx0, Length[combinedParameters]}]
          長度                          長度
```

In[11]:=
```
Table[Table[
表格  表格
  ListPlot[errors[[3 * (idx1 - 1) + idx2]], ImageSize → Medium, PlotRange → All], {idx2, 3}],
  點集圖                                    影像尺寸      中等      繪製範圍      全部
 {idx1, Ceiling[Length[combinedParameters] / 3]}]
         強取…   長度
```

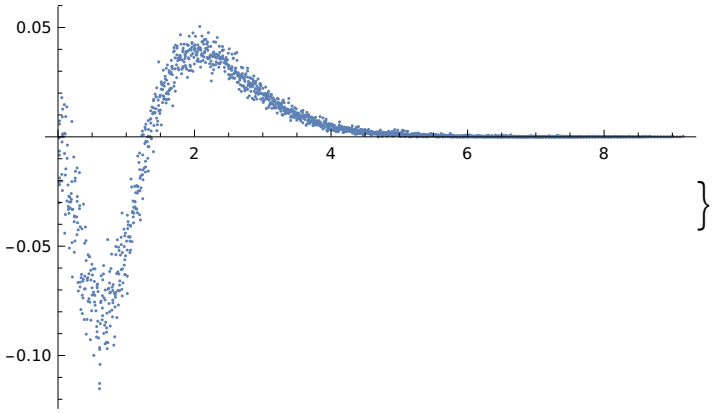
Out[11]=



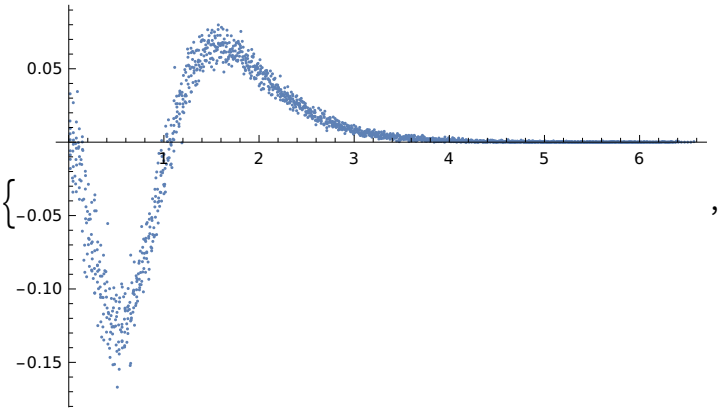
{{ ,


0.04
0.02
2
4
6
8
10
−0.02
−0.04
−0.06

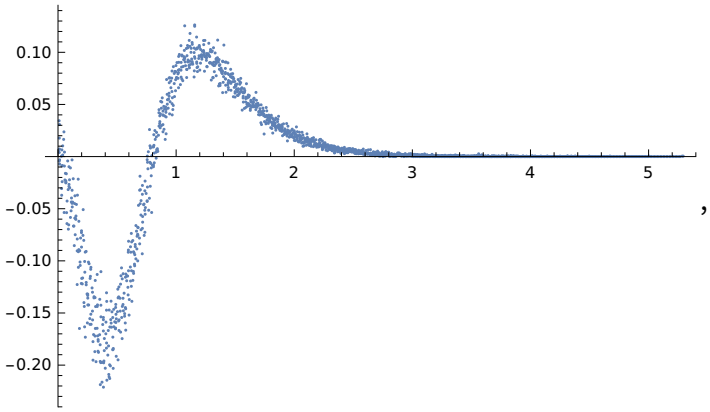
,


0.05
2
4
6
8
−0.05
−0.10

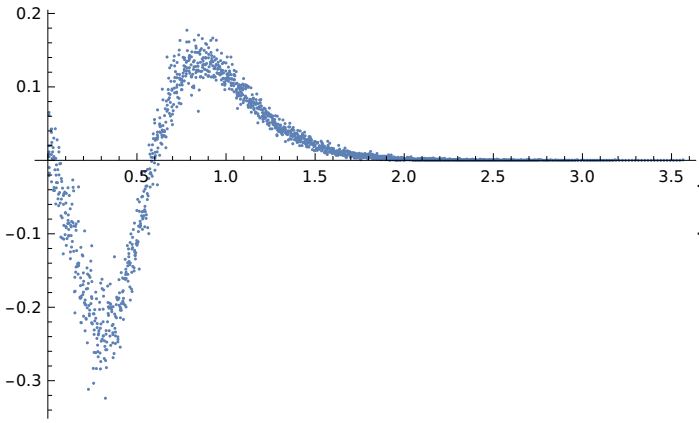
},


0.05
1
2
3
4
5
6
−0.05
−0.10
−0.15

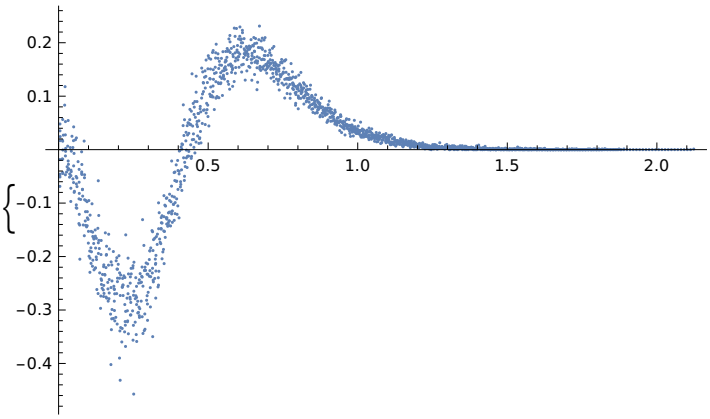
{,


0.10
0.05
1
2
3
4
5
−0.05
−0.10
−0.15
−0.20

,

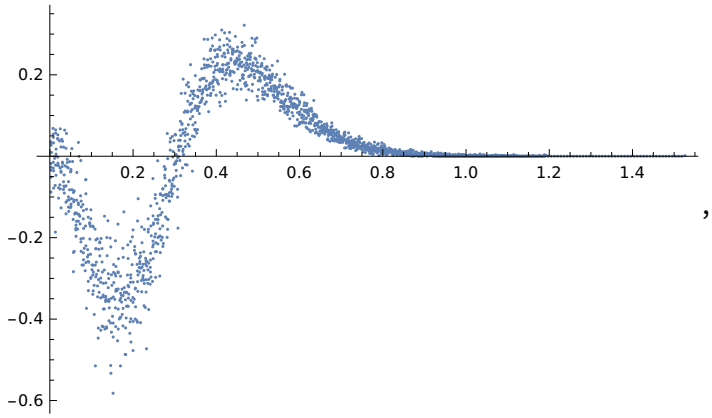

0.2
0.1
0.5
1.0
1.5
2.0
2.5
3.0
3.5
−0.1
−0.2
−0.3

},

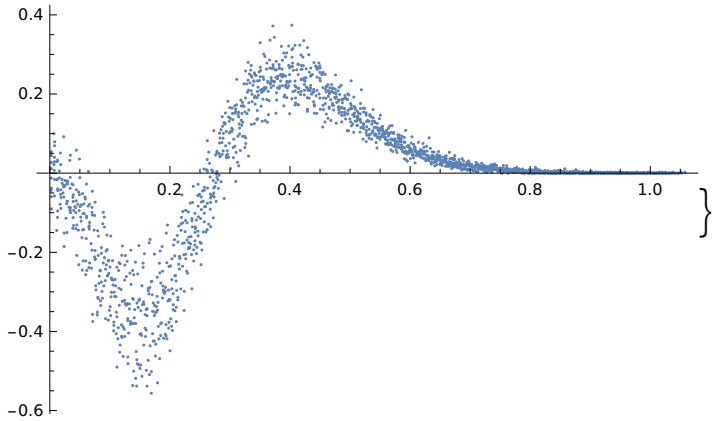

0.2
0.1
0.5
1.0
1.5
2.0
−0.1
−0.2
−0.3
−0.4

{

,

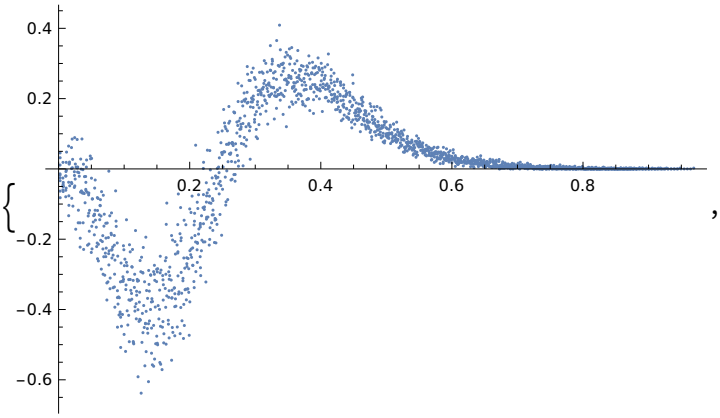

0.2
0.2
0.4
0.6
0.8
1.0
1.2
1.4
−0.2
−0.4
−0.6

,

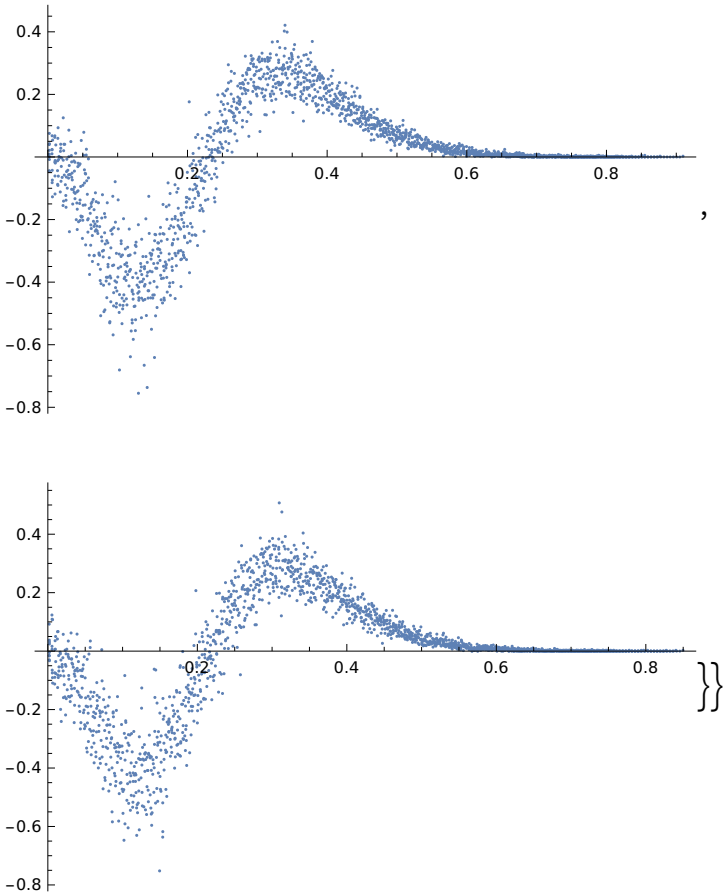

0.4
0.2
0.2
0.4
0.6
0.8
1.0
−0.2
−0.4
−0.6

},

{


0.4
0.2
0.2
0.4
0.6
0.8
−0.2
−0.4
−0.6

,



Fit scaling factors

In[12]:=
```
predictionFree[tau_, gamma_, beta_, alpha_, combinedParameter_] :=
 (3 gamma * tau ^ 2 + beta * combinedParameter * tau + alpha) *
  Exp[-gamma * tau ^ 3 - beta * combinedParameter * tau^2 / 2 - alpha * tau]
```
指數形式

In[13]:=
```
gammas = Table[0, {idx, Length[combinedParameters]}];
betas = Table[0, {idx, Length[combinedParameters]}];
alphas = Table[0, {idx, Length[combinedParameters]}];
Module[{fit = Table[0, {idx0, Length[combinedParameters]}]}, Do[
  fit[[idx0]] = NonlinearModelFit[
    Flatten[Table[Table[histograms[[idx0, idx1, idx2]], {idx2, Length[populationSizes]}],
      {idx1, Length[sequenceLengths]}], 2],
    predictionFree[tau, gamma, beta, alpha, combinedParameters[[idx0]]],
    {gamma, beta, alpha}, tau];
  gammas[[idx0]] = fit[[idx0]]["ParameterTable"][[1, 1, 2, 2]];
  betas[[idx0]] = fit[[idx0]]["ParameterTable"][[1, 1, 3, 2]];
  alphas[[idx0]] = fit[[idx0]]["ParameterTable"][[1, 1, 4, 2]],
  {idx0, Length[combinedParameters]}]]
```

General: Exp[−6525.05] is too small to represent as a normalized machine number; precision may be lost.

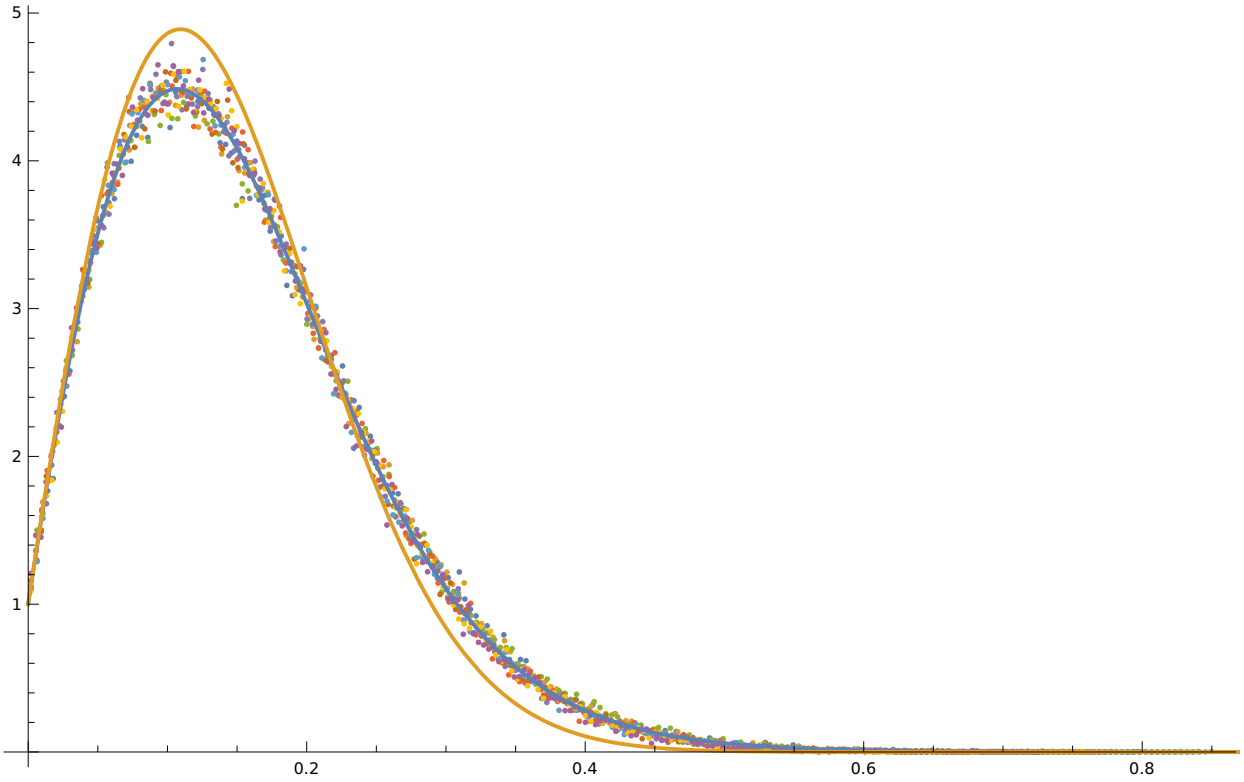
General: Exp[−6525.05] is too small to represent as a normalized machine number; precision may be lost.

General: Exp[−6525.05] is too small to represent as a normalized machine number; precision may be lost.

General: Further output of General::munfl will be suppressed during this calculation.

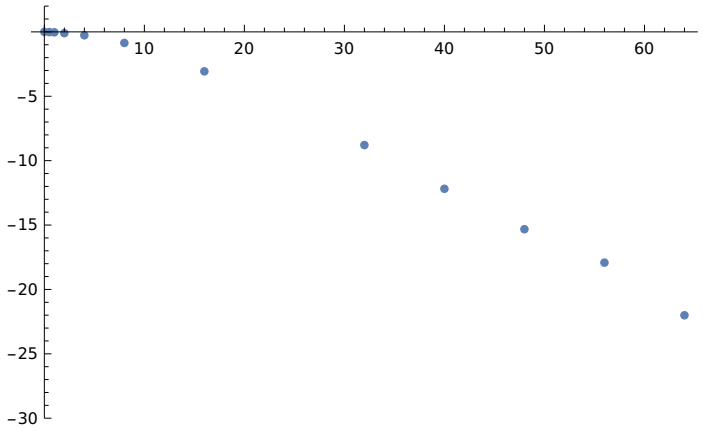
In[17]:=
```
With[{idx0 = 12}, Show[ListPlot[
  Flatten[Table[Table[histograms[[idx0, idx1, idx2]], {idx2, Length[populationSizes]}],
    {idx1, Length[sequenceLengths]}], 1], ImageSize → Full, PlotRange → All],
 Plot[{predictionFree[tau, gammas[[idx0]], betas[[idx0]], alphas[[idx0]],
    combinedParameters[[idx0]]], predictionFree[tau, 0, 1, 1, combinedParameters[[idx0]]]},
  {tau, 0, Transpose[Max[histograms[[idx0, 1, 1]]]][[1]]},
  PlotRange → All, PlotStyle → Thick]]]
```

Out[17]=



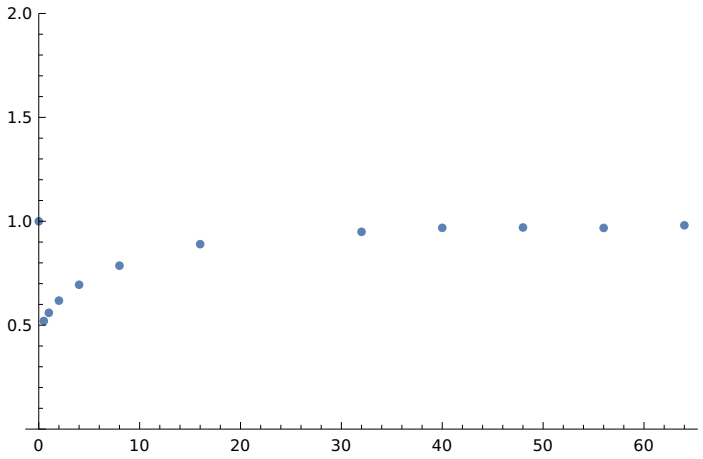
In[18]:=
```
ListPlot[Transpose[{combinedParameters, gammas}], PlotRange → {-30, 2}]
```
點集圖 轉置 繪製範圍

Out[18]=



In[19]:=
```
ListPlot[Transpose[{combinedParameters, betas}], PlotRange → {0, 2}]
```
點集圖 轉置 繪製範圍

Out[19]=



In[20]:=
```
ListPlot[Transpose[{combinedParameters, alphas}], PlotRange → {0, 2}]
```
點集圖 轉置 繪製範圍

Out[20]=