```
In[ ]:= sandwichingSegment[num_, list_] :=
         Module[{ret = {}}, Do[If[list[[idx]] < num && num < list[[idx + 1]],
        模組                ··· 如果
            ret = {list[[idx]], list[[idx + 1]]},], {idx, Length[list] - 1}];
                                                      長度
         Return[ret]]
        返回

In[ ]:= splitIntervals[splitNumber_] := Module[{one = {0, 1}, two = {0, 1}},
                                          模組
         Do[If[RandomInteger[{1, 2}] == 1,
        ··· ··· 偽隨機整數
            AppendTo[one, RandomReal[]],
            附加          偽隨機實數
            AppendTo[two, RandomReal[]]], {idx, 1, splitNumber}];
            附加          偽隨機實數
         one = Sort[one]; two = Sort[two];
               排序             排序
         Return[{one, two}]]
        返回

In[ ]:= shorterProb1[lineageNumber_, trialNumber_, separation_] := Module[{prob = {0, 0}},
                                                                    模組
         Do[Module[{pair = splitIntervals[lineageNumber - 2], one, two, segmentIdx},
        ··· 模組
            one = pair[[1]]; two = pair[[2]];
            segmentIdx = RandomInteger[{1, lineageNumber - 2}];
                         偽隨機整數
            If[segmentIdx > Length[one] - 1 - 1,
            如果          長度
              If[sandwichingSegment[two[[segmentIdx - (Length[one] - 1 - 1) + 1]], one] ==
              如果                                  長度
                 sandwichingSegment[two[[segmentIdx - (Length[one] - 1 - 1) + 1 + separation]], one],
                                                   長度
               prob[[1]] = prob[[1]] + 1, prob[[2]] = prob[[2]] + 1],
              If[sandwichingSegment[one[[segmentIdx + 1]], two] ==
              如果
                 sandwichingSegment[one[[segmentIdx + 1 + separation]], two],
                prob[[1]] = prob[[1]] + 1, prob[[2]] = prob[[2]] + 1]]],
           {trial, trialNumber}]; prob = prob / trialNumber * 1.; Return[prob]]
                                                                  返回

      shorterProb2[lineageNumber_, trialNumber_, separation_] := Module[{prob = {0, 0}},
                                                                  模組
         Do[Module[{pair = splitIntervals[lineageNumber - 2], one, two, segmentIdx},
        ··· 模組
```

```
    one = pair[[1]]; two = pair[[2]];
    segmentIdx = RandomInteger[{1, lineageNumber - 2 - 2 separation}];
                 偽隨機整數
    If[segmentIdx > Length[one] - 1 - 1 - separation,
    如果              長度
     If[sandwichingSegment[
     如果
         two[[segmentIdx - (Length[one] - 1 - 1 - separation) + 1]], one] == sandwichingSegment[
                           長度
         two[[segmentIdx - (Length[one] - 1 - 1 - separation) + 1 + separation]], one],
                           長度
       prob[[1]] = prob[[1]] + 1, prob[[2]] = prob[[2]] + 1],
      If[sandwichingSegment[one[[segmentIdx + 1]], two] ==
      如果
        sandwichingSegment[one[[segmentIdx + 1 + separation]], two],
       prob[[1]] = prob[[1]] + 1, prob[[2]] = prob[[2]] + 1]],
   {trial, trialNumber}];
  prob = prob / trialNumber * 1.;
  Return[prob]
  返回
```

Plot

In[ ]:=
```
plots = Table[Table[{recomb, shorterProb1[recomb + 2, 20 000, separation][[1]]}, {recomb, 50}],
        表格    表格
  {separation, 6}];
```

Part: Part 4 of {0, 0.58805, 1} does not exist.

Part: Part 4 of {0, 0.445313, 1} does not exist.

Part: Part 4 of {0, 0.449093, 1} does not exist.

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

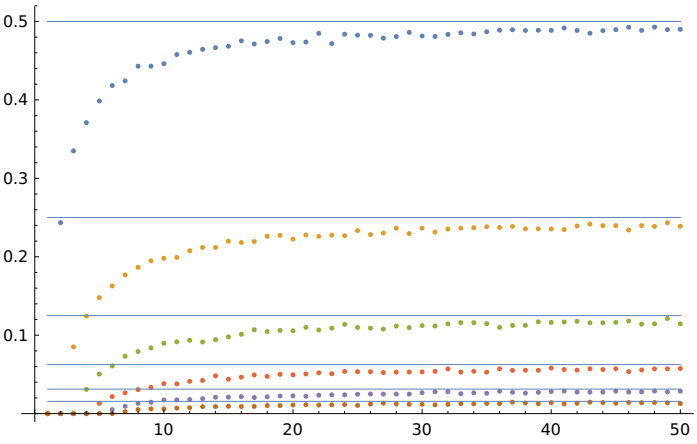
In[ ]:=
```
Print[plots]
列表
```

```
{{{1, 0.}, {2, 0.24345}, {3, 0.335}, {4, 0.371}, {5, 0.39855}, {6, 0.4183},
  {7, 0.42425}, {8, 0.44305}, {9, 0.44305}, {10, 0.4462}, {11, 0.45785}, {12, 0.46065},
  {13, 0.4645}, {14, 0.4666}, {15, 0.4684}, {16, 0.4753}, {17, 0.47135}, {18, 0.47445},
  {19, 0.47835}, {20, 0.47305}, {21, 0.4738}, {22, 0.48485}, {23, 0.47185},
  {24, 0.48385}, {25, 0.48255}, {26, 0.48235}, {27, 0.47875}, {28, 0.48075},
  {29, 0.4861}, {30, 0.48145}, {31, 0.48095}, {32, 0.48355}, {33, 0.48555},
  {34, 0.48405}, {35, 0.4869}, {36, 0.4889}, {37, 0.48945}, {38, 0.4885},
  {39, 0.48875}, {40, 0.48865}, {41, 0.49175}, {42, 0.48855}, {43, 0.485}, {44, 0.4883},
  {45, 0.4896}, {46, 0.4927}, {47, 0.4886}, {48, 0.49285}, {49, 0.48965}, {50, 0.49}},
```

{{1, 0.}, {2, 0.}, {3, 0.0851}, {4, 0.12435}, {5, 0.14795}, {6, 0.16275}, {7, 0.17695},
 {8, 0.18645}, {9, 0.19485}, {10, 0.19805}, {11, 0.19915}, {12, 0.2077}, {13, 0.2119},
 {14, 0.21185}, {15, 0.21985}, {16, 0.21815}, {17, 0.21945}, {18, 0.22615},
 {19, 0.2273}, {20, 0.2225}, {21, 0.2278}, {22, 0.22605}, {23, 0.22755},
 {24, 0.2269}, {25, 0.2334}, {26, 0.2283}, {27, 0.2303}, {28, 0.23645}, {29, 0.2295},
 {30, 0.2365}, {31, 0.2314}, {32, 0.2355}, {33, 0.2365}, {34, 0.2371}, {35, 0.23835},
 {36, 0.2374}, {37, 0.23875}, {38, 0.2356}, {39, 0.23565}, {40, 0.2355},
 {41, 0.23475}, {42, 0.2393}, {43, 0.2417}, {44, 0.23975}, {45, 0.23975},
 {46, 0.23405}, {47, 0.23975}, {48, 0.23875}, {49, 0.2434}, {50, 0.23895}},
{{1, 0.}, {2, 0.}, {3, 0.}, {4, 0.0309}, {5, 0.0505}, {6, 0.06075}, {7, 0.07305}, {8, 0.07915},
 {9, 0.08385}, {10, 0.08975}, {11, 0.0915}, {12, 0.09355}, {13, 0.09135}, {14, 0.09435},
 {15, 0.0979}, {16, 0.10115}, {17, 0.10695}, {18, 0.10465}, {19, 0.1061}, {20, 0.1057},
 {21, 0.11}, {22, 0.1066}, {23, 0.1089}, {24, 0.11385}, {25, 0.10985}, {26, 0.109},
 {27, 0.10775}, {28, 0.1117}, {29, 0.1098}, {30, 0.1123}, {31, 0.1118}, {32, 0.11445},
 {33, 0.1161}, {34, 0.116}, {35, 0.11475}, {36, 0.10995}, {37, 0.11245}, {38, 0.11255},
 {39, 0.11705}, {40, 0.1163}, {41, 0.1168}, {42, 0.11775}, {43, 0.11585}, {44, 0.11595},
 {45, 0.11635}, {46, 0.1181}, {47, 0.114}, {48, 0.11455}, {49, 0.12135}, {50, 0.1145}},
{{1, 0.}, {2, 0.}, {3, 0.}, {4, 0.}, {5, 0.013}, {6, 0.0217}, {7, 0.0265}, {8, 0.03065},
 {9, 0.03345}, {10, 0.03815}, {11, 0.0379}, {12, 0.04115}, {13, 0.04235}, {14, 0.04815},
 {15, 0.04395}, {16, 0.04645}, {17, 0.04925}, {18, 0.04745}, {19, 0.0501}, {20, 0.0495},
 {21, 0.0506}, {22, 0.052}, {23, 0.05085}, {24, 0.05375}, {25, 0.0535}, {26, 0.0534},
 {27, 0.0524}, {28, 0.0529}, {29, 0.05305}, {30, 0.0532}, {31, 0.05395}, {32, 0.05705},
 {33, 0.05295}, {34, 0.054}, {35, 0.05285}, {36, 0.0571}, {37, 0.0551}, {38, 0.05535},
 {39, 0.05525}, {40, 0.0581}, {41, 0.0563}, {42, 0.0555}, {43, 0.05725}, {44, 0.05625},
 {45, 0.0572}, {46, 0.0535}, {47, 0.0557}, {48, 0.0571}, {49, 0.05715}, {50, 0.05755}},
{{1, 0.}, {2, 0.}, {3, 0.}, {4, 0.}, {5, 0.}, {6, 0.00515}, {7, 0.0093}, {8, 0.0131},
 {9, 0.01445}, {10, 0.01745}, {11, 0.01745}, {12, 0.018}, {13, 0.0191}, {14, 0.02085},
 {15, 0.021}, {16, 0.02165}, {17, 0.0205}, {18, 0.0214}, {19, 0.0225}, {20, 0.0227},
 {21, 0.0221}, {22, 0.0235}, {23, 0.024}, {24, 0.02395}, {25, 0.02475}, {26, 0.02505},
 {27, 0.0249}, {28, 0.025}, {29, 0.0249}, {30, 0.0267}, {31, 0.02785}, {32, 0.0279},
 {33, 0.0254}, {34, 0.0265}, {35, 0.02595}, {36, 0.0285}, {37, 0.0272}, {38, 0.0262},
 {39, 0.0271}, {40, 0.0282}, {41, 0.02865}, {42, 0.02755}, {43, 0.0274}, {44, 0.0276},
 {45, 0.02855}, {46, 0.02755}, {47, 0.02775}, {48, 0.02875}, {49, 0.02765}, {50, 0.02855}},
{{1, 0.}, {2, 0.}, {3, 0.}, {4, 0.}, {5, 0.}, {6, 0.}, {7, 0.0025}, {8, 0.00515},
 {9, 0.006}, {10, 0.00605}, {11, 0.00705}, {12, 0.00755}, {13, 0.00895}, {14, 0.009},
 {15, 0.00935}, {16, 0.009}, {17, 0.0092}, {18, 0.0103}, {19, 0.0103}, {20, 0.011},
 {21, 0.01135}, {22, 0.0109}, {23, 0.0112}, {24, 0.01155}, {25, 0.01045}, {26, 0.01215},
 {27, 0.01325}, {28, 0.01225}, {29, 0.01195}, {30, 0.0118}, {31, 0.01125}, {32, 0.0118},
 {33, 0.0127}, {34, 0.01235}, {35, 0.013}, {36, 0.01275}, {37, 0.01455}, {38, 0.01355},
 {39, 0.01265}, {40, 0.01395}, {41, 0.0124}, {42, 0.01315}, {43, 0.01465}, {44, 0.0141},
 {45, 0.0132}, {46, 0.0143}, {47, 0.0139}, {48, 0.0142}, {49, 0.01385}, {50, 0.0128}}}

In[ ]:=
```
Show[ListPlot[plots],
 Plot[Table[1 / 2^separation, {separation, 6}], {recomb, 1, 50}, PlotStyle → Thin]]
```
顯示 點集圖 繪圖 表格 繪製樣式 細

Out[ ]=



Old versions

```
In[ ]:= shorterProb[lineageNumber_, trialNumber_, separation_] := Module[{prob = {0, 0}},
                                                                  模組
  Do[Module[
  ··· 模組
    {pair = splitIntervals[lineageNumber - 2], one, two, segmentNumbers = {0, 0}, segment},
    one = pair[[1]]; two = pair[[2]];
    segmentNumbers[[1]] = Max[{0, Length[one] - 1 - 1 - separation}];
                          最大值  長度
    segmentNumbers[[2]] = Max[{0, Length[two] - 1 - 1 - separation}];
                          最大值  長度
    If[Total[segmentNumbers] > 0,
    ··· 總計
     segment = RandomInteger[{1, Total[segmentNumbers]}];
               偽隨機整數          總計
     If[segment > segmentNumbers[[1]],
     如果
      If[sandwichingSegment[two[[segment - segmentNumbers[[1]] + 1]], one] ==
      如果
        sandwichingSegment[two[[segment - segmentNumbers[[1]] + 1 + separation]], one],
       prob[[1]] = prob[[1]] + 1, prob[[2]] = prob[[2]] + 1],
      If[sandwichingSegment[one[[segment + 1]], two] ==
      如果
        sandwichingSegment[one[[segment + 1 + separation]], two],
       prob[[1]] = prob[[1]] + 1, prob[[2]] = prob[[2]] + 1]], Print["Not enough segments."]
                                                               列表     邏輯非
    ]],
   {trial, trialNumber}];
  prob = prob / trialNumber * 1.;
  Return[prob]]
  返回
```