

Reaction diffusion equation with Schnakenberg kinetics in 2 dim space Parallel-computed by MPI using two nodes

```
SetDirectory["/Users/takasu/home/情報科学科の仕事/講義/平成23年度/H23
  計算機実験2/MPI/testMPI/build/Debug/"]
/Users/takasu/home/情報科学科の仕事/講義/平成23年度/H23
  計算機実験2/MPI/testMPI/build/Debug
```

Single node

データの読み込み

```
size = 51 * 51;
```

```
datau =
  ReadList["RD-2dim-Schnakenberg-u-single-node", {Real, Real, Real}];
datau = Partition[datau, size];
```

```
datav =
  ReadList["RD-2dim-Schnakenberg-v-single-node", {Real, Real, Real}];
datav = Partition[datav, size];
```

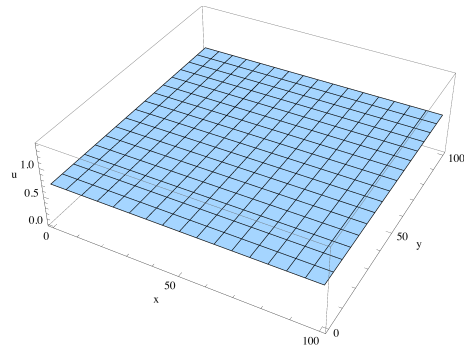
```
Length[datau]
Length[datav]
```

```
100
```

```
100
```

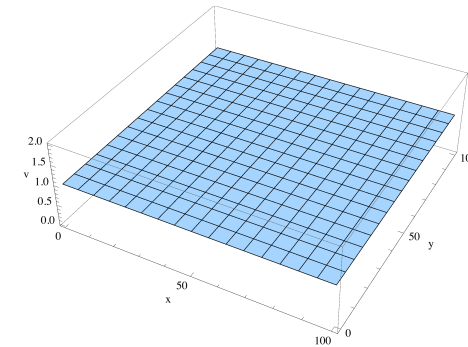
最初の状態 u

```
ListPlot3D[datau[[1]], PlotRange -> All,
  BoxRatios -> {3, 3, 1}, Axes -> True, AxesLabel -> {"x", "y", "u"}]
```



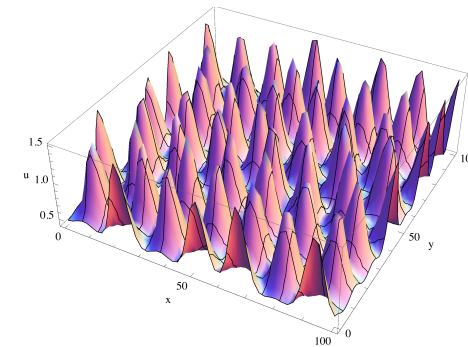
最初の状態 v

```
ListPlot3D[datav[[1]], PlotRange -> All,
  BoxRatios -> {3, 3, 1}, Axes -> True, AxesLabel -> {"x", "y", "v"}]
```

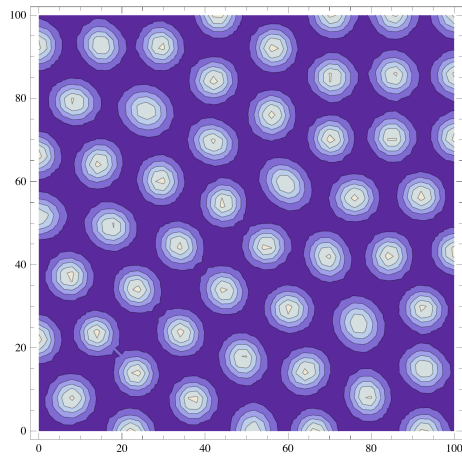


最後の状態 u

```
ListPlot3D[Last[datau], PlotRange -> All,
  BoxRatios -> {3, 3, 1}, Axes -> True, AxesLabel -> {"x", "y", "u"}]
```

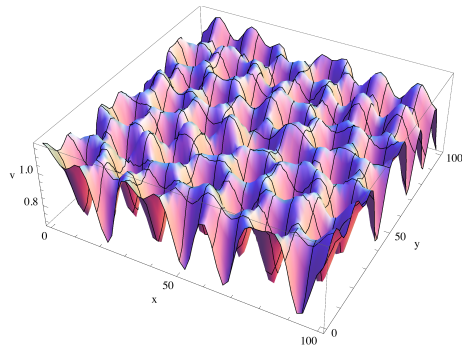


```
ListContourPlot[Last[datau],
PlotRange -> All, BoxRatios -> {3, 3, 1}, Axes -> True]
```

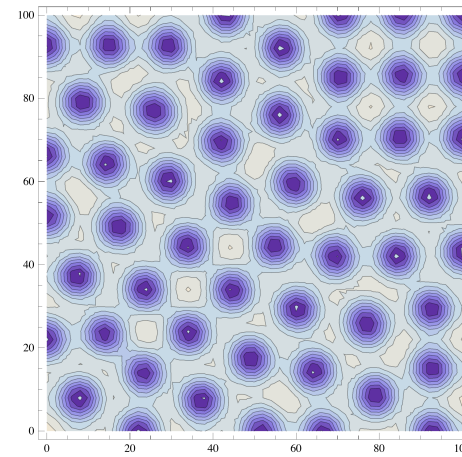


最後の状態 v

```
ListPlot3D[Last[datav], PlotRange -> All,
BoxRatios -> {3, 3, 1}, Axes -> True, AxesLabel -> {"x", "y", "v"}]
```



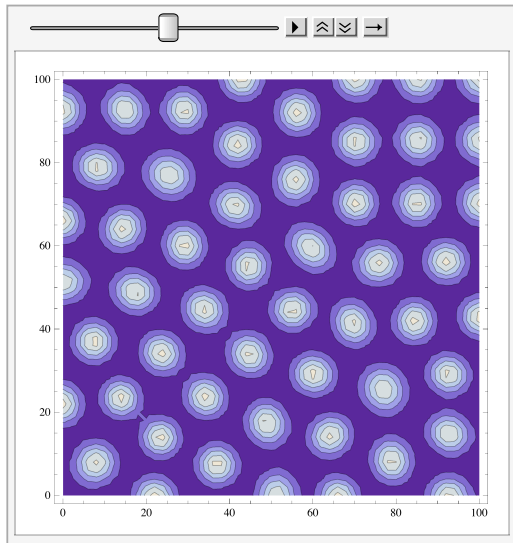
```
ListContourPlot[Last[datav],
PlotRange -> All, BoxRatios -> {3, 3, 1}, Axes -> True]
```



時間変化 u

```
glistu = {};
Do[
PrintTemporary[i];
g = ListContourPlot[datau[[i]],
PlotRange -> All, BoxRatios -> {3, 3, 1}, Axes -> True];
AppendTo[glistu, g], {i, 1, Length[datau], 1}
]
```

ListAnimate[glistu]



最後の状態 v

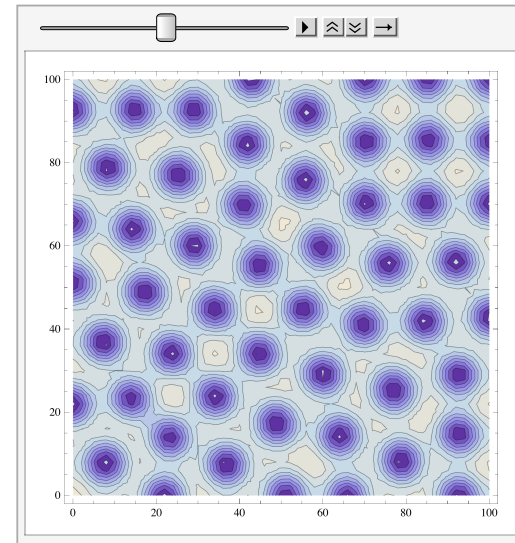
```

glistv = {};
Do[
  PrintTemporary[i];
  g = ListContourPlot[datav[[i]],
    PlotRange -> All, BoxRatios -> {3, 3, 1}, Axes -> True];
  AppendTo[glistv, g], {i, 1, Length[datav], 1}
]

```

General::spell1: スペル間違いの可能性がります。新規シンボル"glistv"はすでにあるシンボル"glistu"に似ています。 >>

ListAnimate[glistv]



2

2

■ MPI with two nodes

```

size1 = 26;
size2 = 51;
size = size1 * size2;

```

```

datau0 = ReadList["RD-2dim-Schnakenberg-u-rank0", {Real, Real, Real}];
datau0 = Partition[datau0, size];

```

```

datau1 = ReadList["RD-2dim-Schnakenberg-u-rank1", {Real, Real, Real}];
datau1 = Partition[datau1, size];

```

```

datav0 = ReadList["RD-2dim-Schnakenberg-v-rank0", {Real, Real, Real}];
datav0 = Partition[datav0, size];

```

```

datav1 = ReadList["RD-2dim-Schnakenberg-v-rank1", {Real, Real, Real}];
datav1 = Partition[datav1, size];

```

```

Length[datau0]
Length[datav0]

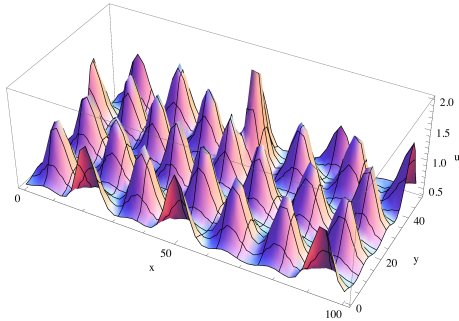
```

250

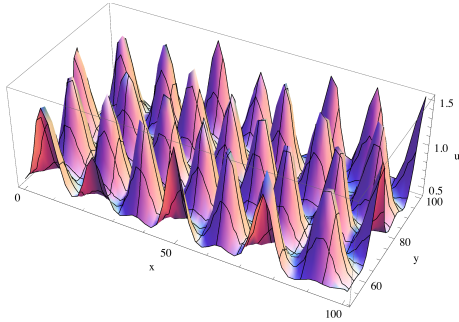
250

描画

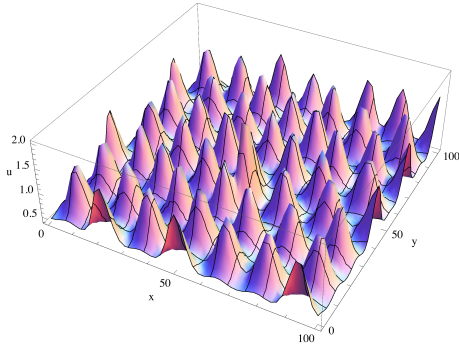
```
ListPlot3D[Last[datau0], PlotRange → All,
BoxRatios → {3, 1.5, 1}, Axes → True, AxesLabel → {"x", "y", "u"}]
```



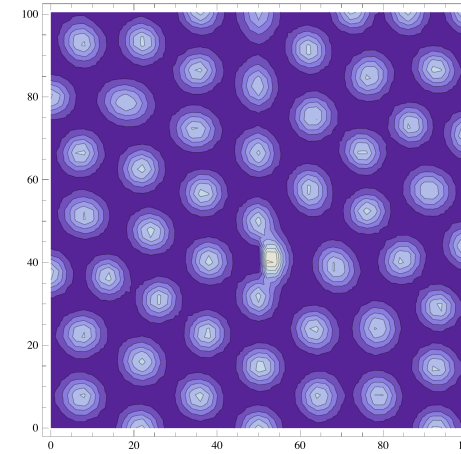
```
ListPlot3D[Last[datau1], PlotRange → All,
BoxRatios → {3, 1.5, 1}, Axes → True, AxesLabel → {"x", "y", "u"}]
```



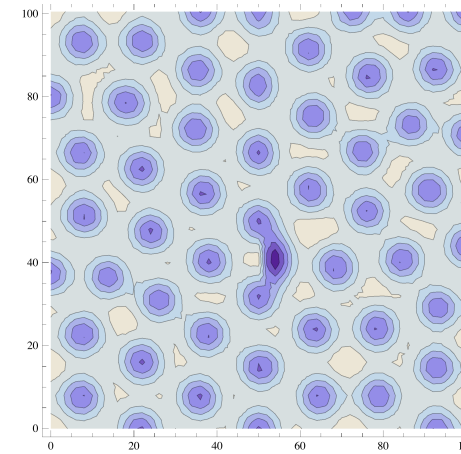
```
ListPlot3D[Join[Last[datau0], Last[datau1]], PlotRange → All,
BoxRatios → {3, 3, 1}, Axes → True, AxesLabel → {"x", "y", "u"}]
```



```
ListContourPlot[Join[Last[datau0], Last[datau1]],
PlotRange → All, BoxRatios → {3, 3, 1}, Axes → True]
```

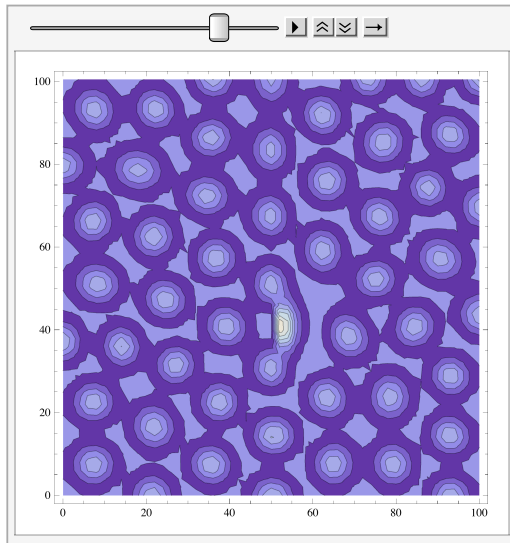


```
ListContourPlot[Join[Last[datau0], Last[datau1]],
PlotRange → All, BoxRatios → {3, 3, 1}, Axes → True]
```



```
glistu = {};
Do[
PrintTemporary[i];
g = ListContourPlot[Join[datau0[[i]], datau1[[i]],
PlotRange → All, BoxRatios → {3, 3, 1}, Axes → True];
AppendTo[glistu, g], {i, 1, Length[datau0], 1}
]
```

ListAnimate[glistu]

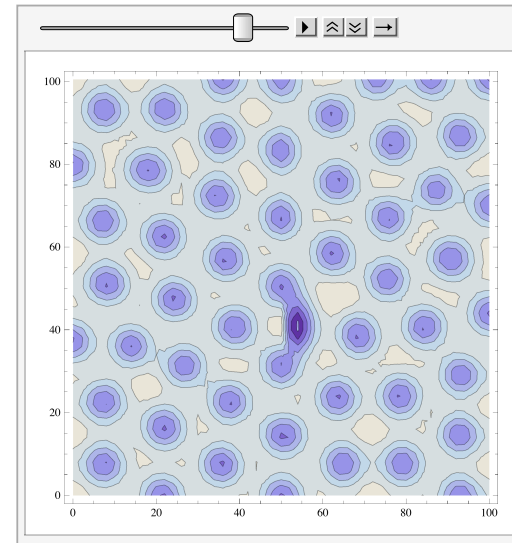


```

glistv = {};
Do[
  PrintTemporary[i];
  g = ListContourPlot[Join[datav0[[i]], datav1[[i]]],
    PlotRange -> All, BoxRatios -> {3, 3, 1}, Axes -> True];
  AppendTo[glistv, g], {i, 1, Length[datav0], 1}
]

```

ListAnimate[glistv]



```

1
1

```