

# 順位データの双対尺度法

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## 1 目的

順位データについて、双対尺度法による解析を行う。

## 2 使用法

```
import sys
sys.path.append("statlib")
from ro_dual import ro_dual
ro_dual(F, verbose=True)
```

行スコアと列スコアのバイプロットを描く

```
import sys
sys.path.append("statlib")
from ro_dual import ro_dual_plot
ro_dual_plot(obj, weighted=False, ax1=1, ax2=2, color="blue", color2="red", alpha=0.5)
```

### 2.1 引数

<code>F</code>	順位データを行列として与える
<code>col_names</code>	評価対象のラベル (デフォルトの <code>None</code> なら, 便宜的な名前を仮定する)
<code>row_names</code>	評価者のラベル (デフォルトの <code>None</code> なら, 便宜的な名前を仮定する)
<code>maxaxis</code>	解の数を制限する (デフォルトは 5)
<code>verbose</code>	必要最小限のプリント出力をする
<code>obj</code>	<code>ro_dual()</code> の戻り値
<code>weighted</code>	<code>True</code> を指定すれば重み付きの行・列スコアをプロットする
<code>ax1</code>	横軸にとる解の番号
<code>ax2</code>	縦軸にとる解の番号
<code>color</code>	列スコアに対する点とテキストの色
<code>color2</code>	行スコアに対する点とテキストの色
<code>alpha</code>	アルファチャンネル (デフォルトは 0.5)

### 2.2 戻り値の名前

<code>"result"</code>	結果表
<code>"rs"</code>	行スコア
<code>"cs"</code>	列スコア

"wrs"                   重みつき行スコア  
 "wcs"                   重みつき列スコア

### 3 使用例

```
F = [[6,1,5,3,2,8,4,7],
      [3,8,1,6,7,5,4,2],
      [5,7,1,6,8,2,4,3],
      [4,6,2,3,8,7,1,5],
      [2,4,6,3,7,5,1,8],
      [2,4,5,3,8,7,1,6],
      [1,7,6,3,8,5,2,4],
      [7,5,3,1,8,4,6,2],
      [4,2,7,3,8,6,5,1],
      [5,1,2,4,7,6,3,8],
      [6,4,3,2,8,7,5,1],
      [3,8,4,2,5,6,1,7],
      [3,2,1,6,4,7,5,8],
      [5,8,1,4,7,3,6,2]]
```

```
import sys
sys.path.append("statlib")
from ro_dual import ro_dual
```

#### Summary

	Axis 1	Axis 2	Axis 3	Axis 4 \
eta square	0.141472	0.122668	0.065831	0.055134
correlation	0.376128	0.350240	0.256576	0.234807
contribution	34.705409	30.092481	16.149470	13.525322
cumulative contribution	34.705409	64.797890	80.947360	94.472681

	Axis 5
eta square	0.022531
correlation	0.150105
contribution	5.527319
cumulative contribution	100.000000

#### Row score

	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5
R1	-1.083260	0.994792	-1.010065	-0.672067	-1.315833
R2	1.401384	-0.437308	0.834155	-0.645887	0.606477
R3	1.305682	-0.686448	0.746310	-0.883252	0.837312
R4	1.308472	1.058171	0.046030	-0.636846	-0.698923
R5	0.344224	1.667944	0.322205	0.693907	0.494508
R6	0.801457	1.605872	-0.247905	0.380521	0.600201
R7	1.223503	0.791443	0.369551	1.455372	0.523979

R8	1.088726	-0.588526	-1.448211	-0.366436	-1.225776
R9	0.546940	0.076377	-2.061734	1.009645	1.406954
R10	0.054101	1.275397	-0.597721	-1.707246	0.661620
R11	1.105210	-0.149283	-1.824117	-0.473628	-0.557675
R12	0.717716	1.173728	1.083847	0.399296	-2.093881
R13	-0.463729	0.898715	0.310415	-2.059992	0.991960
R14	1.322475	-1.026901	0.345257	-0.710888	-0.482432

Column score

	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5
C1	0.350584	0.838875	0.909848	0.764129	1.298141
C2	-1.255766	0.664667	-1.665293	-0.660003	1.241109
C3	0.865885	-0.247532	0.542972	-2.396498	-0.226517
C4	0.564459	0.597548	-1.094065	0.526014	-1.762960
C5	-2.004001	-0.508396	0.819158	0.114437	-1.094249
C6	-0.041102	-1.186677	0.881640	0.483695	0.509676
C7	0.588290	1.462987	0.633878	0.459257	-0.263120
C8	0.931652	-1.621472	-1.028138	0.708968	0.297920

Weighted row score

	Axis 1	Axis 2	Axis 3	Axis 4	Axis 5
R1	-1.083260	0.994792	-1.010065	-0.672067	-1.315833
R2	1.401384	-0.437308	0.834155	-0.645887	0.606477
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R10	0.054101	1.275397	-0.597721	-1.707246	0.661620
R11	1.105210	-0.149283	-1.824117	-0.473628	-0.557675
R12	0.717716	1.173728	1.083847	0.399296	-2.093881
R13	-0.463729	0.898715	0.310415	-2.059992	0.991960
R14	1.322475	-1.026901	0.345257	-0.710888	-0.482432

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C8 0.931652 -1.621472 -1.028138 0.708968 0.297920

```
a = ro_dual(F)
```

Summary

	Axis 1	Axis 2	Axis 3	Axis 4 \
eta square	0.141472	0.122668	0.065831	0.055134
correlation	0.376128	0.350240	0.256576	0.234807
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R5	0.344224	1.667944	0.322205	0.693907	0.494508
R6	0.801457	1.605872	-0.247905	0.380521	0.600201
R7	1.223503	0.791443	0.369551	1.455372	0.523979
R8	1.088726	-0.588526	-1.448211	-0.366436	-1.225776
R9	0.546940	0.076377	-2.061734	1.009645	1.406954
R10	0.054101	1.275397	-0.597721	-1.707246	0.661620
R11	1.105210	-0.149283	-1.824117	-0.473628	-0.557675
R12	0.717716	1.173728	1.083847	0.399296	-2.093881
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Column score

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C6	-0.041102	-1.186677	0.881640	0.483695	0.509676
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Weighted row score

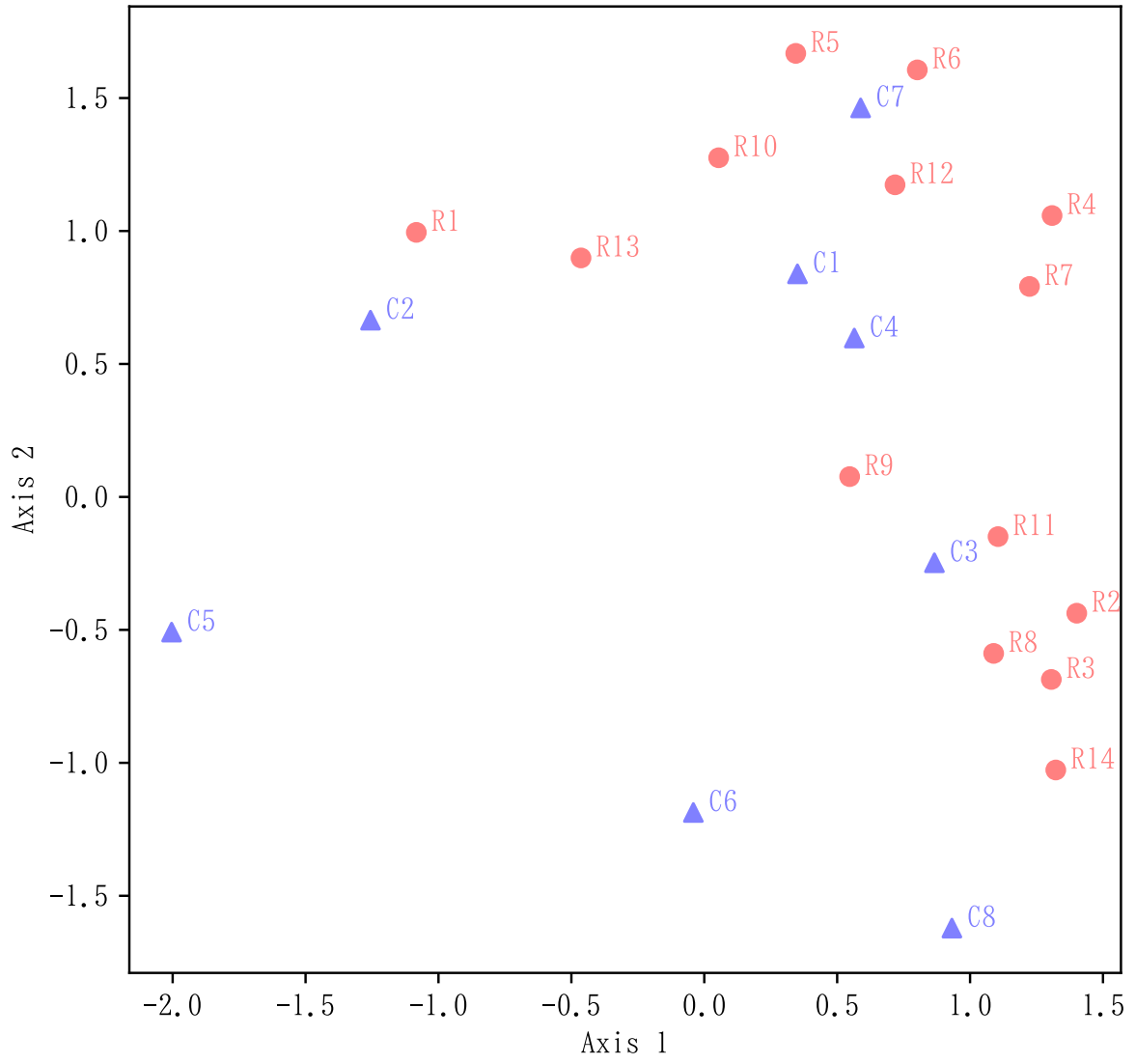
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```
from ro_dual import ro_dual_plot
ro_dual_plot(a)
```

Dual Scale Analysis (non-weighted scores)



```
ro_dual_plot(a, weighted=True)
```

Dual Scale Analysis (weighted scores)

