New Graph

[5, 5, 5, 5, 3], [4, 4, 4, 1, 2]

π = [2, 3, 3, 4, 6]
δ= [1, 1, 1, 3, 4]

POSSIBLE RANKS

1 x 18
2 x 9
3 x 6

BASE DETERMINANT 1/8, .1250000000

NullSpace of Δ

{2, 3}, {1, 4, 5}

Nullspace of A

[{3},{2}] `,` [{5},{1, 4}]

1 . Coloring, {}

R: [5, 5, 5, 5, 3]
B: [4, 4, 4, 1, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	3 *vs* 3	3 *vs* 3	2 *vs* 2	3 *vs* 3

Omega Rank for R :
$-\overset{+}{t}\quad t^3$
,

cycles: {{3, 5}} order: 2

$$\begin{pmatrix} 0 & 0 & 6 & 0 & 12 \\ 0 & 0 & 12 & 0 & 6 \end{pmatrix}$$

$$[0, 0, y_1, 0, y_2]$$

Omega Rank for B :
$-t^{2^+}\ t^4$

,
cycles: {{1, 4}} order: 2

$$\begin{pmatrix} 4 & 6 & 0 & 8 & 0 \\ 8 & 0 & 0 & 10 & 0 \\ 10 & 0 & 0 & 8 & 0 \end{pmatrix}$$

$$[y_1, y_2, 0, y_3, 0]$$

2 . Coloring, {2}

Ωp(Δ)=0: $p = s - 4s^{2^+}\ 4s^3$

R: [5, 4, 5, 5, 3]
B: [4, 5, 4, 1, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
2 *vs* 3	3 *vs* 4	3 *vs* 4	2 *vs* 3	2 *vs* 4

Omega Rank for R :
$-t^{2^+}\ t^4$

,
cycles: {{3, 5}} order: 2

$$\begin{pmatrix} 0 & 0 & 6 & 3 & 9 \\ 0 & 0 & 9 & 0 & 9 \\ 0 & 0 & 9 & 0 & 9 \end{pmatrix}$$

$$[0, 0, -y_1 + y_2, y_1, y_2]$$

$p = -s^{2^+} \; s^3$

Omega Rank for B :
$-t^{+} \; t^3$

,
cycles: {{2, 5}, {1, 4}} order: 2

$$\begin{pmatrix} 4 & 6 & 0 & 5 & 3 \\ 5 & 3 & 0 & 4 & 6 \end{pmatrix}$$
$$\begin{pmatrix} 4 & 6 & 0 & 5 & 3 \\ 5 & 3 & 0 & 4 & 6 \end{pmatrix}$$

$$[-y_1 + 2\,y_2, y_1, 0, y_2, -2\,y_1 + 3\,y_2]$$

$p = -s^{+} \; s^3 \quad p' = -s^{+} \; s^3$

M N

$$\begin{pmatrix} 0 & 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 & 3 \\ 0 & 2 & 0 & 0 & 2 \\ 1 & 0 & 3 & 2 & 0 \end{pmatrix} \quad \begin{pmatrix} 0 & 1 & 0 & 0 & 1 \\ 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 \\ 1 & 0 & 1 & 1 & 0 \end{pmatrix}$$

NM

$$\begin{pmatrix} 2 & 0 & 3 & 4 & 0 \\ 0 & 3 & 0 & 0 & 6 \\ 2 & 0 & 3 & 4 & 0 \\ 2 & 0 & 3 & 4 & 0 \\ 0 & 3 & 0 & 0 & 6 \end{pmatrix}$$

τ= 13 , r'= 1/2

R: [5, 4, 5, 5, 3]
B: [4, 5, 4, 1, 2]

Ranges

Action of R on ranges, [[5], [4], [5], [4], [4]]

Action of B on ranges, ⌊⌊5⌋, ⌊3⌋, ⌊2⌋, ⌊3⌋, ⌊1⌋⌋

Cycles: R , {{3, 5}}, B , {{2, 5}, {1, 4}}

β({1, 2}) = 1/9
β({1, 5}) = 1/9
β({2, 4}) = 2/9
β({3, 5}) = 1/3
β({4, 5}) = 2/9

Partitions
α([{2, 5}, {1, 3, 4}]) = 1/1

b1 = {2, 5} ` , ` b2 = {1, 3, 4}

Action of R and B on the blocks of the partitions: = [2, 1] [1, 2]
with invariant measure [1, 1]

N by blocks, check: true . ` See partition graph.

` ` See level-2 partition graph.

`

Right Group	
Coloring	{2}
Rank	2
R,B	[5, 4, 5, 5, 3], [4, 5, 4, 1, 2]
π_2	[1, 0, 0, 1, 0, 2, 0, 0, 3, 2]
u_2	[1, 0, 0, 1, 1, 1, 0, 0, 1, 1] (dim 1)
wpp	[3, 2, 3, 3, 2]

3 . Coloring, {3}

R: [5, 5, 4, 5, 3]
B: [4, 4, 5, 1, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	3 *vs* 4	3 *vs* 3	4 *vs* 4

Omega Rank for R :
$-t^{+}\ t^{4}$

,
cycles: {{3, 4, 5}} order: 3

$$\begin{matrix} 0 & 0 & 6 & 3 & 9 \\ (0 & 0 & 9 & 6 & 3) \\ 0 & 0 & 3 & 9 & 6 \end{matrix}$$

$$[0, 0, y_3, y_2, y_1]$$

Omega Rank for B :
$-t^{3^{+}}\ t^{5}$

,
cycles: {{1, 4}} order: 4

$$\begin{pmatrix} 4 & 6 & 0 & 5 & 3 \\ 5 & 3 & 0 & 10 & 0 \\ 10 & 0 & 0 & 8 & 0 \\ 8 & 0 & 0 & 10 & 0 \end{pmatrix}$$

$$[y_2, y_3, 0, y_4, y_1]$$

4 . Coloring, {4}

R: [5, 5, 5, 1, 3]
B: [4, 4, 4, 5, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3

Omega Rank for R :
$-t^{2} + t^{4}$
,
cycles: {{3, 5}} order: 2

$$\begin{matrix} 4 & 0 & 6 & 0 & 8 \\ (0 & 0 & 8 & 0 & 10) \\ 0 & 0 & 10 & 0 & 8 \end{matrix}$$

$$[y_1, 0, y_2, 0, y_3]$$

Omega Rank for B :
$-t + t^{4}$
,
cycles: {{2, 4, 5}} order: 3

$$\begin{matrix} 0 & 6 & 0 & 8 & 4 \\ (0 & 4 & 0 & 6 & 8) \\ 0 & 8 & 0 & 4 & 6 \end{matrix}$$

$$[0, y_1, 0, y_2, y_3]$$

5 . Coloring, {5}

R: [5, 5, 5, 5, 2]
B: [4, 4, 4, 1, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	3 *vs* 3	3 *vs* 3	2 *vs* 2	3 *vs* 3

Omega Rank for R :

$-t^{'}\ t^3$

,

cycles: {{2, 5}} order: 2

$$\begin{pmatrix} 0 & 6 & 0 & 0 & 12 \\ 0 & 12 & 0 & 0 & 6 \end{pmatrix}$$

$$[0, y_1, 0, 0, y_2]$$

Omega Rank for B :

$-t^{2^+}\ t^4$

,

cycles: {{1, 4}} order: 2

$$\begin{pmatrix} 4 & 0 & 6 & 8 & 0 \\ 8 & 0 & 0 & 10 & 0 \\ 10 & 0 & 0 & 8 & 0 \end{pmatrix}$$

$$[y_1, 0, y_2, y_3, 0]$$

6 . Coloring, {2, 3}

Ωp(Δ)=0: $p = s^2 - 2s^3$

R: [5, 4, 4, 5, 3]
B: [4, 5, 5, 1, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
2 *vs* 3	2 *vs* 4	2 *vs* 4	1 *vs* 3	2 *vs* 4

Omega Rank for R :

$-t^{+}\ t^4$

,

cycles: {{3, 4, 5}} order: 3

$$\begin{matrix} 0 & 0 & 6 & 6 & 6 \\ (0 & 0 & 6 & 6 & 6) \\ 0 & 0 & 6 & 6 & 6 \end{matrix}$$

$$[0, 0, y_1, y_1, y_1]$$

$p = -s^{+} s^2$ $p = -s^{+} s^3$

Omega Rank for B :
$-t^{+} t^3$

,
cycles: {{2, 5}, {1, 4}} order: 2

$$\begin{matrix} 4 & 6 & 0 & 2 & 6 \\ 2 & 6 & 0 & 4 & 6 \\ (& & & &) \\ 4 & 6 & 0 & 2 & 6 \\ 2 & 6 & 0 & 4 & 6 \end{matrix}$$

$$[-y_1 + y_2, y_2, 0, y_1, y_2]$$

$p = -s^{+} s^3$ $p' = -s^{+} s^3$

` See 3-level graph

`

M N

$$\begin{matrix} 0 & 2 & 0 & 0 & 2 \\ 2 & 0 & 0 & 1 & 3 \\ (0 & 0 & 0 & 3 & 3) \\ 0 & 1 & 3 & 0 & 4 \\ 2 & 3 & 3 & 4 & 0 \end{matrix} \quad \begin{matrix} 0 & 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 & 1 \\ (1 & 0 & 0 & 1 & 1) \\ 0 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{matrix}$$

NM

$$\begin{matrix} 4 & 3 & 3 & 8 & 6 \\ 2 & 6 & 6 & 4 & 6 \\ (2 & 6 & 6 & 4 & 6) \\ 4 & 3 & 3 & 8 & 6 \\ 2 & 3 & 3 & 4 & 12 \end{matrix}$$

τ= 9 , r'= 2/3

R: [5, 4, 4, 5, 3]
B: [4, 5, 5, 1, 2]

Ranges

Action of R on ranges, [[3], [3], [3]]
Action of B on ranges, [[2], [1], [1]]

Cycles: R , {{3, 4, 5}}, B , {{2, 5}, {1, 4}}

β({1, 2, 5}) = 1/3
β({2, 4, 5}) = 1/6
β({3, 4, 5}) = 1/2

Partitions
α([{2, 3}, {1, 4}, {5}]) = 1/1

b1 = {2, 3} ` , ` b2 = {1, 4} ` , ` b3 = {5}

Action of R and B on the blocks of the partitions: = [3, 1, 2] [3, 2, 1]
with invariant measure [1, 1, 1]

N by blocks, check: true . ` See partition graph.

` ` See level-3 partition graph.

`

Right Group	
Coloring	{2, 3}
Rank	3
R,B	[5, 4, 4, 5, 3], [4, 5, 5, 1, 2]
π_2	[2, 0, 0, 2, 0, 1, 3, 3, 3, 4]
u_2	[1, 1, 0, 1, 0, 1, 1, 1, 1, 1] (dim 1)
wpp	[2, 2, 2, 2, 1]
π_3	[0, 0, 2, 0, 0, 0, 0, 0, 1, 3]
u_3	[0, 0, 1, 0, 1, 0, 0, 0, 1, 1]

7 . Coloring, {2, 4}

R: [5, 4, 5, 1, 3]
B: [4, 5, 4, 5, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	4 *vs* 4	3 *vs* 3

Omega Rank for R :
$-t^{3}{}^{+}\ t^{5}$

,
cycles: {{3, 5}} order: 4

$$\begin{pmatrix} 4 & 0 & 6 & 3 & 5 \\ 3 & 0 & 5 & 0 & 10 \\ 0 & 0 & 10 & 0 & 8 \\ 0 & 0 & 8 & 0 & 10 \end{pmatrix}$$

$$[y_1, 0, y_2, y_3, y_4]$$

Omega Rank for B :
$-t^{2}{}^{+}\ t^{4}$

,
cycles: {{2, 5}} order: 2

$$\begin{pmatrix} 0 & 6 & 0 & 5 & 7 \\ 0 & 7 & 0 & 0 & 11 \\ 0 & 11 & 0 & 0 & 7 \end{pmatrix}$$

$$[0, y_1, 0, y_2, y_3]$$

8 . Coloring, {2, 5}

R: [5, 4, 5, 5, 2]
B: [4, 5, 4, 1, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	3 *vs* 4	3 *vs* 3	4 *vs* 4

Omega Rank for R :
$-t^{+} \quad t^{4}$

,
cycles: {{2, 4, 5}} order: 3

$$\begin{matrix} 0 & 6 & 0 & 3 & 9 \\ (0 & 9 & 0 & 6 & 3) \\ 0 & 3 & 0 & 9 & 6 \end{matrix}$$

$$[0, y_3, 0, y_2, y_1]$$

Omega Rank for B :
$-t^{3+} \quad t^{5}$

,
cycles: {{1, 4}} order: 4

$$\begin{matrix} 4 & 0 & 6 & 5 & 3 \\ 5 & 0 & 3 & 10 & 0 \\ (10 & 0 & 0 & 8 & 0) \\ 8 & 0 & 0 & 10 & 0 \end{matrix}$$

$$[y_1, 0, y_2, y_3, y_4]$$

9 . Coloring, {3, 4}

R: [5, 5, 4, 1, 3]
B: [4, 4, 5, 5, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	4 *vs* 4	3 *vs* 3

Omega Rank for R :
$-t^{+} \quad t^{5}$

,
cycles: {{1, 3, 4, 5}} order: 4

$$\begin{pmatrix} 4 & 0 & 6 & 3 & 5 \\ 3 & 0 & 5 & 6 & 4 \\ 6 & 0 & 4 & 5 & 3 \\ 5 & 0 & 3 & 4 & 6 \end{pmatrix}$$

$$[y_1, 0, y_2, y_3, y_4]$$

Omega Rank for B :
$-t^{+} \quad t^{4}$

,
cycles: {{2, 4, 5}} order: 3

$$\begin{pmatrix} 0 & 6 & 0 & 5 & 7 \\ 0 & 7 & 0 & 6 & 5 \\ 0 & 5 & 0 & 7 & 6 \end{pmatrix}$$

$$[0, y_1, 0, y_2, y_3]$$

10 . Coloring, {3, 5}

$\Omega p(\Delta)=0: \quad p = s - 4s^{2^{+}} \; 4s^{3}$

R: [5, 5, 4, 5, 2]
B: [4, 4, 5, 1, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
2 *vs* 3	3 *vs* 4	3 *vs* 4	2 *vs* 3	2 *vs* 4

Omega Rank for R :
$-t^{2}{}^{+}\ t^{4}$

,
cycles: {{2, 5}} order: 2

$$\begin{matrix} 0 & 6 & 0 & 3 & 9 \\ (0 & 9 & 0 & 0 & 9) \\ 0 & 9 & 0 & 0 & 9 \end{matrix}$$

$$[0, -y_1 + y_2, 0, y_1, y_2]$$

$p = -s^{2}{}^{+}\ s^{3}$

Omega Rank for B :
$-t^{+}\ t^{3}$

,
cycles: {{3, 5}, {1, 4}} order: 2

$$\begin{matrix} 4 & 0 & 6 & 5 & 3 \\ 5 & 0 & 3 & 4 & 6 \\ (& & & &) \\ 4 & 0 & 6 & 5 & 3 \\ 5 & 0 & 3 & 4 & 6 \end{matrix}$$

$$[-y_1 + 2\,y_2, 0, y_1, y_2, -2\,y_1 + 3\,y_2]$$

$p = -s^{+}\ s^{3}\ \ p' = -s^{+}\ s^{3}$

$$\begin{matrix} & & & & & M & & & & & N \\ 0 & 0 & 1 & 0 & 1 & & 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 0 & 3 & & 0 & 0 & 1 & 0 & 1 \\ (1 & 0 & 0 & 2 & 0) & & (1 & 1 & 0 & 1 & 0) \\ 0 & 0 & 2 & 0 & 2 & & 0 & 0 & 1 & 0 & 1 \\ 1 & 3 & 0 & 2 & 0 & & 1 & 1 & 0 & 1 & 0 \\ & & & & & NM & & & & & \end{matrix}$$

$$\begin{matrix} 2 & 3 & 0 & 4 & 0 \\ 2 & 3 & 0 & 4 & 0 \\ (0 & 0 & 3 & 0 & 6) \\ 2 & 3 & 0 & 4 & 0 \\ 0 & 0 & 3 & 0 & 6 \end{matrix}$$

τ= 13 , r'= 1/2

R: [5, 5, 4, 5, 2]
B: [4, 4, 5, 1, 3]

Ranges

Action of R on ranges, [[5], [3], [3], [5], [3]]
Action of B on ranges, [[5], [4], [4], [2], [1]]

Cycles: R , {{2, 5}}, B , {{3, 5}, {1, 4}}

β({1, 3}) = 1/9
β({1, 5}) = 1/9
β({2, 5}) = 1/3
β({3, 4}) = 2/9
β({4, 5}) = 2/9

Partitions
α([{1, 2, 4}, {3, 5}]) = 1/1

b1 = {1, 2, 4} ` , ` b2 = {3, 5}

Action of R and B on the blocks of the partitions: = [2, 1] [1, 2]
with invariant measure [1, 1]

N by blocks, check: true . ` See partition graph.

` ` See level-2 partition graph.

`

Right Group	
Coloring	{3, 5}
Rank	2
R,B	[5, 5, 4, 5, 2], [4, 4, 5, 1, 3]

π_2	[0, 1, 0, 1, 0, 0, 3, 2, 0, 2]
u_2	[0, 1, 0, 1, 1, 0, 1, 1, 0, 1] (dim 1)
wpp	[3, 3, 2, 3, 2]

11 . Coloring, {4, 5}

R: [5, 5, 5, 1, 2]
B: [4, 4, 4, 5, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3

Omega Rank for R :
$-t^{2^+}\ t^4$
,
cycles: {{2, 5}} order: 2

$$\begin{matrix} 4 & 6 & 0 & 0 & 8 \\ (0 & 8 & 0 & 0 & 10) \\ 0 & 10 & 0 & 0 & 8 \end{matrix}$$

$$[y_1, y_2, 0, 0, y_3]$$

Omega Rank for B :
$-t^{+}\ t^4$
,
cycles: {{3, 4, 5}} order: 3

$$\begin{matrix} 0 & 0 & 6 & 8 & 4 \\ (0 & 0 & 4 & 6 & 8) \\ 0 & 0 & 8 & 4 & 6 \end{matrix}$$

$$[0, 0, y_1, y_2, y_3]$$

12 . Coloring, {2, 3, 4}

R: [5, 4, 4, 1, 3]
B: [4, 5, 5, 5, 2]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	4 *vs* 4	3 *vs* 3

Omega Rank for R :
$-t^{+}\ t^5$
,
cycles: {{1, 3, 4, 5}} order: 4

$$\begin{pmatrix} 4 & 0 & 6 & 6 & 2 \\ 6 & 0 & 2 & 6 & 4 \\ 6 & 0 & 4 & 2 & 6 \\ 2 & 0 & 6 & 4 & 6 \end{pmatrix}$$

$$[y_1, 0, y_2, y_3, y_4]$$

Omega Rank for B :
$-t^{2+}\ t^4$
,
cycles: {{2, 5}} order: 2

$$\begin{pmatrix} 0 & 6 & 0 & 2 & 10 \\ 0 & 10 & 0 & 0 & 8 \\ 0 & 8 & 0 & 0 & 10 \end{pmatrix}$$

$$[0, y_1, 0, y_2, y_3]$$

13 . Coloring, {2, 3, 5}

Ωp(Δ)=0: $p = s^2 - 2s^3$

R: [5, 4, 4, 5, 2]
B: [4, 5, 5, 1, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
2 *vs* 3	2 *vs* 4	2 *vs* 4	1 *vs* 3	2 *vs* 4

Omega Rank for R :
$-\overset{+}{t}\ t^4$
,
cycles: {{2, 4, 5}} order: 3

$$\begin{matrix} 0 & 6 & 0 & 6 & 6 \\ (0 & 6 & 0 & 6 & 6) \\ 0 & 6 & 0 & 6 & 6 \end{matrix}$$

$$[0, y_1, 0, y_1, y_1]$$

$p = -\overset{+}{s}\ s^2$ $p = -\overset{+}{s}\ s^3$

Omega Rank for B :
$-\overset{+}{t}\ t^3$
,
cycles: {{3, 5}, {1, 4}} order: 2

$$\begin{matrix} 4 & 0 & 6 & 2 & 6 \\ 2 & 0 & 6 & 4 & 6 \\ (& & & &) \\ 4 & 0 & 6 & 2 & 6 \\ 2 & 0 & 6 & 4 & 6 \end{matrix}$$

$$[y_2 - y_1, 0, y_2, y_1, y_2]$$

$p = -\overset{+}{s}\ s^3$ $p' = -\overset{+}{s}\ s^3$

` See 3-level graph

`

$$M = \begin{pmatrix} 0 & 0 & 2 & 0 & 2 \\ 0 & 0 & 0 & 3 & 3 \\ 2 & 0 & 0 & 1 & 3 \\ 0 & 3 & 1 & 0 & 4 \\ 2 & 3 & 3 & 4 & 0 \end{pmatrix} \quad N = \begin{pmatrix} 0 & 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{pmatrix}$$

$$NM = \begin{pmatrix} 4 & 3 & 3 & 8 & 6 \\ 2 & 6 & 6 & 4 & 6 \\ 2 & 6 & 6 & 4 & 6 \\ 4 & 3 & 3 & 8 & 6 \\ 2 & 3 & 3 & 4 & 12 \end{pmatrix}$$

τ= 9 , r'= 2/3

R: [5, 4, 4, 5, 2]
B: [4, 5, 5, 1, 3]

Ranges

Action of R on ranges, [[2], [2], [2]]
Action of B on ranges, [[3], [1], [1]]

Cycles: R , {{2, 4, 5}}, B , {{3, 5}, {1, 4}}

β({1, 3, 5}) = 1/3
β({2, 4, 5}) = 1/2
β({3, 4, 5}) = 1/6

Partitions
α([{2, 3}, {1, 4}, {5}]) = 1/1

b1 = {2, 3} ` , ` b2 = {1, 4} ` , ` b3 = {5}

Action of R and B on the blocks of the partitions: = [3, 1, 2] [3, 2, 1]
with invariant measure [1, 1, 1]

N by blocks, check: true . ` See partition graph.

` ` See level-3 partition graph.

`

Right Group	
Coloring	{2, 3, 5}
Rank	3
R,B	[5, 4, 4, 5, 2], [4, 5, 5, 1, 3]
π_2	[0, 2, 0, 2, 0, 3, 3, 1, 3, 4]
u_2	[1, 1, 0, 1, 0, 1, 1, 1, 1, 1] (dim 1)
wpp	[2, 2, 2, 2, 1]
π_3	[0, 0, 0, 0, 2, 0, 0, 0, 3, 1]
u_3	[0, 0, 1, 0, 1, 0, 0, 0, 1, 1]

14 . Coloring, {2, 4, 5}

R: [5, 4, 5, 1, 2]
B: [4, 5, 4, 5, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	4 *vs* 4	3 *vs* 3

Omega Rank for R :
$-t^{+} \quad t^5$

,
cycles: {{1, 2, 4, 5}} order: 4

$$\begin{pmatrix} 4 & 6 & 0 & 3 & 5 \\ 3 & 5 & 0 & 6 & 4 \\ 6 & 4 & 0 & 5 & 3 \\ 5 & 3 & 0 & 4 & 6 \end{pmatrix}$$

$$[y_1, y_2, 0, y_3, y_4]$$

Omega Rank for B :
$-\overset{+}{t}\ \ t^4$

,
cycles: {{3, 4, 5}} order: 3

$$\begin{pmatrix} 0 & 0 & 6 & 5 & 7 \\ 0 & 0 & 7 & 6 & 5 \\ 0 & 0 & 5 & 7 & 6 \end{pmatrix}$$

$$[0, 0, y_1, y_2, y_3]$$

15 . Coloring, {3, 4, 5}

R: [5, 5, 4, 1, 2]
B: [4, 4, 5, 5, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	4 *vs* 4	3 *vs* 3

Omega Rank for R :
$-\overset{+}{t^3}\ \ t^5$

,
cycles: {{2, 5}} order: 4

$$\begin{pmatrix} 4 & 6 & 0 & 3 & 5 \\ 3 & 5 & 0 & 0 & 10 \\ 0 & 10 & 0 & 0 & 8 \\ 0 & 8 & 0 & 0 & 10 \end{pmatrix}$$

$$[y_1, y_2, 0, y_3, y_4]$$

Omega Rank for B :
$-t^{2} + t^{4}$

,
cycles: {{3, 5}} order: 2

$$\begin{matrix} 0 & 0 & 6 & 5 & 7 \\ (0 & 0 & 7 & 0 & 11) \\ 0 & 0 & 11 & 0 & 7 \end{matrix}$$

$$[0, 0, y_1, y_2, y_3]$$

16 . Coloring, {2, 3, 4, 5}

R: [5, 4, 4, 1, 2]
B: [4, 5, 5, 5, 3]

` See graph

` ` See pair graph

`

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	4 *vs* 4	3 *vs* 3

Omega Rank for R :
$-t + t^{5}$

,
cycles: {{1, 2, 4, 5}} order: 4

$$\begin{matrix} 4 & 6 & 0 & 6 & 2 \\ 6 & 2 & 0 & 6 & 4 \\ (6 & 4 & 0 & 2 & 6) \\ 2 & 6 & 0 & 4 & 6 \end{matrix}$$

$$[y_1, y_2, 0, y_3, y_4]$$

Omega Rank for B :
$-t^{2} + t^{4}$

,
cycles: {{3, 5}} order: 2

$$\begin{matrix} 0 & 0 & 6 & 2 & 10 \\ (0 & 0 & 10 & 0 & 8\ ) \\ 0 & 0 & 8 & 0 & 10 \end{matrix}$$

$$[0, 0, y_1, y_2, y_3]$$

SUMMARY	
Graph Type	CC
ν(A)	2
ν(Δ)	2
π	[2, 3, 3, 4, 6]
Dbly Stoch	false

SANDWICH		Total 0
No .	Coloring	Rank

RT GROUPS		Total 4	
No .	Coloring	Rank	Solv
1	{2, 3}	3	Not Solvable
2	{3, 5}	2	Solvable
3	{2}	2	Solvable
4	{2, 3, 5}	3	Not Solvable

Δ-RANK'D	SC'D !RK'D	τ-RANK'D	R/B RANK'D	NOT SYNC'D	Total Runs	2^{n-1}
12	0	12 , 10	12 , 12	4	16	16