

## Single Nucleotide Polymorphism Spectral Decomposition (SNPSpD) - RESULTS

Matrix of pairwise LD correlations for your markers:

	1	2	3	4	5	6	7	8	9	10
1	1	0.99	0.83	0.99	0.99	0.59	-0.61	0.61	0.61	0.58
2	0.99	1	0.82	0.98	0.98	0.58	-0.60	0.60	0.60	0.57
3	0.83	0.82	1	0.82	0.82	0.69	-0.71	0.71	0.71	0.69
4	0.99	0.98	0.82	1	1.00	0.61	-0.63	0.63	0.63	0.60
5	0.99	0.98	0.82	1.00	1	0.61	-0.63	0.63	0.63	0.60
6	0.59	0.58	0.69	0.61	0.61	1	-0.86	0.86	0.86	0.81
7	-0.61	-0.60	-0.71	-0.63	-0.63	-0.86	1	-1.00	-1.00	-0.94
8	0.61	0.60	0.71	0.63	0.63	0.86	-1.00	1	1.00	0.94
9	0.61	0.60	0.71	0.63	0.63	0.86	-1.00	1.00	1	0.94
10	0.58	0.57	0.69	0.60	0.60	0.81	-0.94	0.94	0.94	1

Original (total) number of marker loci (M) after removing redundant (collinear) SNPs:

7

For factor 1 to M, original eigenvalues associated with the LD correlation matrix:

1 5.4433  
 2 1.0652  
 3 0.2104  
 4 0.2009  
 5 0.0496  
 6 0.0231  
 7 0.0074

Variance of the observed eigenvalues:

3.9753

Effective number of independent marker loci [Meff]:

3.5926

Experiment-wide significance threshold required to keep Type I error rate at 5%:

0.0139175361883280

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 USING THE REPORTEDLY MORE ACCURATE ESTIMATE OF THE Meff [MeffLi] PROPOSED BY LI AND JI (2005):

Effective Number of Independent Marker Loci [MeffLi] (using Equation 5 of Li and Ji 2005):

3

Experiment-wide Significance Threshold Required to Keep Type I Error Rate at 5%:

0.0169524275084415

NB: I recommend using the Li and Ji (2005) approach only if MeffLi < Meff.

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 SELECT A SUBSET OF SNPs WHILE OPTIMISING INFORMATION:

For factor 1 to M, Eigenvalues and Proportion of Variance, after Varimax Rotation:

1 3.2469 0.4638  
 2 2.4722 0.3532  
 3 0.5970 0.0853  
 4 0.6016 0.0859

```

5 0.0516 0.0074
6 0.0231 0.0033
7 0.0076 0.0011

```

Principal component coefficients for varimax-rotated matrix:

- Columns represent factors (principal components) 1 to M
- Rows represent SNP 1 to M

```

      SNP      1      2      3      4      5      6      7
[1,] t-5991c -0.9302 0.2761 -0.1856 0.1379 -0.006  -6e-04  0.0702
[2,] a-5466c -0.9306 0.2684 -0.1753 0.1364 -0.0068  0.103  -0.0438
[3,] t-3892c -0.6147 0.4071 -0.6495 0.1857 -0.0044 -7e-04  1e-04
[4,] a-240t  -0.9191 0.304  -0.1578 0.1572 -0.0051 -0.1116 -0.0274
[5,] t-1237c -0.3071 0.6602 -0.1735 0.6631 -0.0049 -9e-04  1e-04
[6,] g2215a  -0.3291 0.8843 -0.1646 0.2256 -0.1781 -7e-04  2e-04
[7,] 4656ct  -0.3004 0.9208 -0.1671 0.1193 0.1404 -0.002  -2e-04

```

Factor "loadings" after varimax rotation:

- Columns represent factors 1 to M
- Rows represent SNP 1 to M
- SNPs contributing the MOST to each rotated factor are designated by a "1"

```

      SNP      1 2 3 4 5 6 7
[1,] t-5991c 0 0 0 0 0 0 1
[2,] a-5466c 1 0 0 0 0 0 0
[3,] t-3892c 0 0 1 0 0 0 0
[4,] a-240t  0 0 0 0 0 0 1
[5,] t-1237c 0 0 0 1 0 0 0
[6,] g2215a  0 0 0 0 1 0 0
[7,] 4656ct  0 1 0 0 0 0 0

```

=> Select one SNP to represent either:

- i. each factor,
- ii. the factors with the largest Meff eigenvalues, or
- iii. the factors explaining a selected proportion of variance.

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SELECT A SUBSET OF SNPs WHILE OPTIMISING INFORMATION:

For factor 1 to M, Eigenvalues and Proportion of Variance, after Promax Rotation:

```

1 2.9602 0.4760
2 1.8631 0.2996
3 0.6735 0.1083
4 0.6115 0.0983
5 0.0749 0.0120
6 0.0253 0.0041
7 0.0105 0.0017

```

Principal component coefficients for promax-rotated matrix:

- Columns represent factors (principal components) 1 to M
- Rows represent SNP 1 to M

```

      SNP      1      2      3      4      5      6      7
[1,] t-5991c -1.002  0.0082 -0.0055 0.0015 0      0      0.1013
[2,] a-5466c -1.0036 0.0074 -0.0044 0.0014 0      0.0935 -0.0153
[3,] t-3892c -0.1911 0.0389 -0.8206 0.0048 0      0      0
[4,] a-240t  -0.955  0.0121 -0.0029 0.0025 0      -0.1286 -0.0024
[5,] t-1237c -0.0119 0.2693 -0.0042 0.7819 0      0      0
[6,] g2215a  -0.0157 0.8666 -0.0034 0.0105 -0.2553 0      0
[7,] 4656ct  -0.0109 1.0187 -0.0036 8e-04  0.0986 0      0

```

Factor "loadings" after promax rotation:

- Columns represent factors 1 to M
- Rows represent SNP 1 to M
- SNPs contributing the MOST to each rotated factor are designated by a "1"

```

      SNP      1 2 3 4 5 6 7
[1,] t-5991c 0 0 0 0 0 0 1
[2,] a-5466c 1 0 0 0 0 0 0
[3,] t-3892c 0 0 1 0 0 0 0
[4,] a-240t  0 0 0 0 0 0 1

```

```
[5,] t-1237c 0 0 0 1 0 0 0
[6,] g2215a 0 0 0 0 1 0 0
[7,] 4656ct 0 1 0 0 0 0 0
```

=> Select one SNP to represent either:

- i. each factor,
- ii. the factors with the largest Meff eigenvalues, or
- iii. the factors explaining a selected proportion of variance.

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The following data may be copied and pasted to a local file for plotting by GOLD:

M1	M2	all	al2	N	df(0)	df(1)	ChiSq	pvalue	delta2	D'
1	2	2	2	88	86	85	169.38	0.00000	0.976	1.000
1	3	2	2	88	86	85	101.72	0.00000	0.690	1.000
1	4	2	2	88	86	85	169.38	0.00000	0.976	1.000
1	5	2	2	88	86	85	169.38	0.00000	0.976	1.000
1	6	2	2	88	86	85	49.07	0.00000	0.350	0.951
1	7	2	2	88	86	85	47.28	0.00000	0.376	0.876
1	8	2	2	88	86	85	47.28	0.00000	0.376	0.876
1	9	2	2	88	86	85	47.28	0.00000	0.376	0.876
1	10	2	2	88	86	85	39.85	0.00000	0.337	0.801
2	3	2	2	88	86	85	99.34	0.00000	0.673	1.000
2	4	2	2	88	86	85	159.43	0.00000	0.952	0.976
2	5	2	2	88	86	85	159.43	0.00000	0.952	0.976
2	6	2	2	88	86	85	47.25	0.00000	0.341	0.950
2	7	2	2	88	86	85	46.47	0.00000	0.365	0.874
2	8	2	2	88	86	85	46.47	0.00000	0.365	0.874
2	9	2	2	88	86	85	46.47	0.00000	0.365	0.874
2	10	2	2	88	86	85	39.05	0.00000	0.326	0.798
3	4	2	2	88	86	85	99.34	0.00000	0.673	1.000
3	5	2	2	88	86	85	99.34	0.00000	0.673	1.000
3	6	2	2	88	86	85	61.31	0.00000	0.481	0.926
3	7	2	2	88	86	85	61.14	0.00000	0.507	0.845
3	8	2	2	88	86	85	61.14	0.00000	0.507	0.845
3	9	2	2	88	86	85	61.14	0.00000	0.507	0.845
3	10	2	2	88	86	85	53.92	0.00000	0.476	0.791
4	5	2	2	88	86	85	179.80	0.00000	1.000	1.000
4	6	2	2	88	86	85	58.05	0.00000	0.378	1.000
4	7	2	2	88	86	85	52.71	0.00000	0.402	0.916
4	8	2	2	88	86	85	52.71	0.00000	0.402	0.916
4	9	2	2	88	86	85	52.71	0.00000	0.402	0.916
4	10	2	2	88	86	85	44.11	0.00000	0.361	0.839
5	6	2	2	88	86	85	58.05	0.00000	0.378	1.000
5	7	2	2	88	86	85	52.71	0.00000	0.402	0.916
5	8	2	2	88	86	85	52.71	0.00000	0.402	0.916
5	9	2	2	88	86	85	52.71	0.00000	0.402	0.916
5	10	2	2	88	86	85	44.11	0.00000	0.361	0.839
6	7	2	2	88	86	85	112.52	0.00000	0.746	0.972
6	8	2	2	88	86	85	112.52	0.00000	0.746	0.972
6	9	2	2	88	86	85	112.52	0.00000	0.746	0.972
6	10	2	2	88	86	85	91.80	0.00000	0.652	0.940
7	8	2	2	88	86	85	184.39	0.00000	1.000	1.000
7	9	2	2	88	86	85	184.39	0.00000	1.000	1.000
7	10	2	2	88	86	85	142.94	0.00000	0.888	0.976
8	9	2	2	88	86	85	184.39	0.00000	1.000	1.000
8	10	2	2	88	86	85	142.94	0.00000	0.888	0.976
9	10	2	2	88	86	85	142.94	0.00000	0.888	0.976

**If there are no results between the above two lines there must be a problem with your "ldmax" input files => please re-check. However, if you are 100% confident that your .pre and .map files are correct but cannot get any results, please email me, detailing your problem.**

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