

APL - Pseudoinverse und zyklische Filterung

```
)LOAD ORTHOG
SAVED 2004-05-27 09.47.30 (GMT-5)
)VARS
A          A1          A2          ANLEITUNG  B          C
D          EDIT2HELP  EDIT2HELPUK EPS          FGI          FIF
FLENGTH   FMATRIX    FMGS          FNORMALIZE IA1          IA2
X0        Y          Y1          Y2
)FNS
COIBM     EDIT2      GI          IF          LENGTH   MATRIX    MGS
```

NORMALIZE

```
X←1 2 3
H←3 3ρ1 2 1 3 1 2 0 0 0
H
1 2 1
3 1 2
0 0 0
HP←GI H
H
1 2 1
3 1 2
0 0 0
HP
-2.0000000000E-1  0.3142857143 0
 6.0000000000E-1 -0.2285714286 0
-8.809142651E-19  0.1428571429 0
2⊖HP
-.20  .31  .00
 .60 -.23  .00
 .00  .14  .00
Y←H+.×X
Y
8 11 0
XD←HP+.×Y
XD
1.857142857 2.285714286 1.571428571
E←X-XD
E
-0.8571428571 -0.2857142857 1.428571429
H+.×E
-3.552713679E-15 -4.218847494E-15 0
```

```
)LOAD DBVII
SAVED 2005-11-17 10.14.08 (GMT-5)
OX
1 0 1 1 0 0 1 0 0 1
F
1 0 0 0 0 0 1 1
1 1 0 0 0 0 0 1
1 1 1 0 0 0 0 0
0 1 1 1 0 0 0 0
0 0 1 1 1 0 0 0
0 0 0 1 1 1 0 0
0 0 0 0 1 1 1 0
0 0 0 0 0 1 1 1
)VARS
```

<i>A</i>	<i>ANLEITUNG</i>	<i>B</i>	<i>BASIS</i>	<i>C</i>	<i>EPS</i>	<i>EU</i>
<i>EX</i>	<i>F</i>	<i>FI</i>	<i>GX</i>	<i>GXN</i>	<i>GY</i>	<i>GYN</i>
<i>H</i>	<i>H2</i>	<i>MA</i>	<i>MB</i>	<i>N</i>	<i>NOISE</i>	<i>NOISE1</i>
<i>0</i>						
<i>NOISE20</i>	<i>NOISE30</i>	<i>OX</i>	<i>P</i>	<i>PI</i>	<i>PP</i>	<i>RBASIS</i>
<i>RX</i>	<i>RY</i>	<i>U</i>	<i>X</i>	<i>X0</i>	<i>X0D</i>	<i>Y</i>

Y0 *Z*
H ← *ZYKL* 1 1 1 0 0 0 0 0 0 0 0

H
1 1 1 0 0 0 0 0 0 0
0 1 1 1 0 0 0 0 0 0
0 0 1 1 1 0 0 0 0 0
0 0 0 1 1 1 0 0 0 0
0 0 0 0 1 1 1 0 0 0
0 0 0 0 0 1 1 1 0 0
0 0 0 0 0 0 1 1 1 0
0 0 0 0 0 0 0 1 1 1
1 0 0 0 0 0 0 0 1 1
1 1 0 0 0 0 0 0 0 1

ρH
10 10
8 10 ↑ *H*
1 1 1 0 0 0 0 0 0 0
0 1 1 1 0 0 0 0 0 0
0 0 1 1 1 0 0 0 0 0
0 0 0 1 1 1 0 0 0 0
0 0 0 0 1 1 1 0 0 0
0 0 0 0 0 1 1 1 0 0
0 0 0 0 0 0 1 1 1 0
0 0 0 0 0 0 0 1 1 1

H ← 8 10 ↑ *H*
H
1 1 1 0 0 0 0 0 0 0
0 1 1 1 0 0 0 0 0 0
0 0 1 1 1 0 0 0 0 0
0 0 0 1 1 1 0 0 0 0
0 0 0 0 1 1 1 0 0 0
0 0 0 0 0 1 1 1 0 0
0 0 0 0 0 0 1 1 1 0
0 0 0 0 0 0 0 1 1 1

Y ← *H* + . × *X*
Y ← *H* + . × *OX*

Y
2 2 2 1 1 1 1 1

HP ← *GI* *H*
HP

0.8182	-0.7273	1.480E-16	0.5455	-0.4545	1.850E-16	0.2727	-
0.1818							
0.09091	0.697	-6.667E-1	0.06061	0.3939	-3.333E-1	0.0303	
0.09091							
0.09091	0.0303	6.667E-1	-0.6061	0.06061	3.333E-1	-0.303	
0.09091							
-0.1818	0.2727	0.000E0	0.5455	-0.4545	1.110E-16	0.2727	-
0.1818							
0.09091	-0.303	3.333E-1	0.06061	0.3939	-3.333E-1	0.0303	
0.09091							

0.09091 0.0303 -3.333E-1 0.3939 0.06061 3.333E-1 -0.303
 0.09091
 -0.1818 0.2727 1.110E-16 -0.4545 0.5455 1.110E-16 0.2727 -
 0.1818
 0.09091 -0.303 3.333E-1 0.06061 -0.6061 6.667E-1 0.0303
 0.09091
 0.09091 0.0303 -3.333E-1 0.3939 0.06061 -6.667E-1 0.697
 0.09091
 -0.1818 0.2727 -1.456E-16 -0.4545 0.5455 -3.720E-16 -0.7273
 0.8182

$XD \leftarrow HP + . \times Y$

XD

0.3636 0.4848 1.152 0.3636 0.4848 0.1515 0.3636 0.4848 0.1515 0.36
36

$2 \nabla XD$

.36 .48 1.15 .36 .48 .15 .36 .48 .15 .36

OX

1 0 1 1 0 0 1 0 0 1

\square ZYKLISCHE ENTFALTUNG

F

1 0 0 0 0 0 1 1
 1 1 0 0 0 0 0 1
 1 1 1 0 0 0 0 0
 0 1 1 1 0 0 0 0
 0 0 1 1 1 0 0 0
 0 0 0 1 1 1 0 0
 0 0 0 0 1 1 1 0
 0 0 0 0 0 1 1 1

$X \leftarrow 1$ 0 1 1 0 1 0 0

$Y \leftarrow F + . \times X$

Y

1 1 2 2 2 1 1

$FI \leftarrow \boxplus F$

FI

0.6667 -0.3333 0.6667 -0.3333 -0.3333 0.6667 -0.3333 -0.3333
 -0.3333 0.6667 -0.3333 0.6667 -0.3333 -0.3333 0.6667 -0.3333
 -0.3333 -0.3333 0.6667 -0.3333 0.6667 -0.3333 -0.3333 0.6667
 0.6667 -0.3333 -0.3333 0.6667 -0.3333 0.6667 -0.3333 -0.3333
 -0.3333 0.6667 -0.3333 -0.3333 0.6667 -0.3333 0.6667 -0.3333
 -0.3333 -0.3333 0.6667 -0.3333 -0.3333 0.6667 -0.3333 0.6667
 0.6667 -0.3333 -0.3333 0.6667 -0.3333 -0.3333 0.6667 -0.3333
 -0.3333 0.6667 -0.3333 -0.3333 0.6667 -0.3333 -0.3333 0.6667

$F + . \times FI$

1.000E0 0.000E0 5.551E-17 0.000E0 0.000E0 5.551E-17 0
 0
 5.551E-17 1.000E0 5.551E-17 0.000E0 0.000E0 5.551E-17 0
 0
 5.551E-17 5.551E-17 1.000E0 0.000E0 0.000E0 5.551E-17 0
 0
 5.551E-17 5.551E-17 1.110E-16 1.000E0 0.000E0 5.551E-17 0
 0
 5.551E-17 5.551E-17 1.110E-16 5.551E-17 1.000E0 5.551E-17 0
 0
 5.551E-17 5.551E-17 1.110E-16 5.551E-17 5.551E-17 1.000E0 0
 0
 -5.551E-17 5.551E-17 0.000E0 -5.551E-17 5.551E-17 0.000E0 1
 0
 0.000E0 -5.551E-17 5.551E-17 0.000E0 -5.551E-17 5.551E-17 0

$XD \leftarrow FI + . \times Y$

XD

```
1 -1.665E-16 1 1 -5.551E-17 1 -2.22E-16 0
  X
1 0 1 1 0 1 0 0
  2 X D
  1.00 .00 1.00 1.00 .00 1.00 .00 .00
  X
1 0 1 1 0 1 0 0
```