testG

Example for algorithm testG. Algorithm is usefull only for testing QWTB toolbox. It calculates maximal and minimal value of the record. GUF is calculated by wrapper.

See also `qwtb`

Contents

Generate sample data

Two quantities are prepared: `t` and `y`.

```
t.v = [1:20];
y.v = [1:14 13:-1:8];
```

All uncertainties are set to 1.

```
t.u = t.v.*0 + 1;
y.u = y.v.*0 + 1;
```

Set degrees of freedom.

```
t.d = t.v.*0 + 60;
y.d = y.v.*0 + 9;
```

Quantities are put into data input structure `DI`.

```
DI.t = t;
DI.y = y;
```

Create calculation settings `CS` and set uncertainty calculation method to GUM uncertainty framework.

```
CS = [];
CS.unc = 'guf';
```

Call algorithm

Use QWTB to apply algorithm `testG` to data `DI` with calculation settings `CS`.

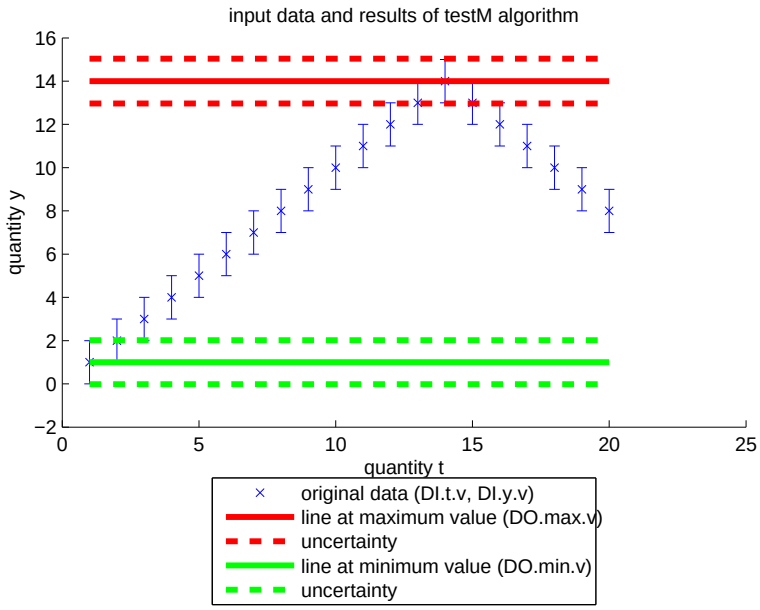
```
DO = qwtb('testG', DI, CS);
```

```
QWTB: default correlation matrix generated for quantity ‘t‘
QWTB: default correlation matrix generated for quantity ‘y‘
QWTB: uncertainty calculation by means of wrapper or algorithm
```

Plot results

Plot input data and calculated maximal and minimal values as a red and green lines with uncertainties represented by dashed lines.

```
figure
hold on
errorbar(DI.t.v, DI.y.v, DI.y.u, 'xb')
plot([DI.t.v(1) DI.t.v(end)], [DO.max.v DO.max.v], '-r', 'linewidth', 3)
plot([DI.t.v(1) DI.t.v(end)], [DO.max.v - DO.max.u DO.max.v - DO.max.u], '--r', 'linewid
plot([DI.t.v(1) DI.t.v(end)], [DO.min.v DO.min.v], '-g', 'linewidth', 3)
plot([DI.t.v(1) DI.t.v(end)], [DO.min.v - DO.min.u DO.min.v - DO.min.u], '--g', 'linewid
plot([DI.t.v(1) DI.t.v(end)], [DO.max.v + DO.max.u DO.max.v + DO.max.u], '--r', 'linewid
plot([DI.t.v(1) DI.t.v(end)], [DO.min.v + DO.min.u DO.min.v + DO.min.u], '--g', 'linewid
legend('original data (DI.t.v, DI.y.v)', 'line at maximum value (DO.max.v)', 'uncertaint
xlabel('quantity t')
ylabel('quantity y')
title('input data and results of testG algorithm')
hold off
```


input data and results of testM algorithm
quantity y
quantity t
16
14
12
10
8
6
4
2
0
−2
0
5
10
15
20
25
original data (DI.t.v, DI.y.v)
line at maximum value (DO.max.v)
uncertainty
line at minimum value (DO.min.v)
uncertainty