EÐL207G

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pure data

```
u = symunit;
nm = double(separateUnits(unitConvert(u.nm, u.m)));
cm = double(separateUnits(unitConvert(u.cm, u.m)));
mm = double(separateUnits(unitConvert(u.mm, u.m)));
uA = double(separateUnits(unitConvert(u.uA, u.A)));

rulercmW = 705; % 8cm -29cm = 21cm
pix2mm = rulercmW/2100*mm;
```

tilraun 1

```
findMidl1 = @(p) p(ceil(end/2));
cntr1pix2mm = @(p) (p-findMidl1(p))*pix2mm;

tilraun1 = [62 255 374 490 682];
tilraun1 = cntr1pix2mm(tilraun1);
```

tilraun 2

```
findMidl2 = @(p) (p(end/2)+p(end/2+1))/2;
cntr2pix2mm = @(p) (p-findMidl2(p))*pix2mm;

tilraun2_025 = [266 293 320 346 376 400 427 454];
tilraun2_025 = cntr2pix2mm(tilraun2_025);

tilraun2_05 = [327 342 356 369 382 395];
tilraun2_05 = cntr2pix2mm(tilraun2_05);

tilraun2_075 = [235 279 326 406 448 493];
tilraun2_075 = cntr2pix2mm(tilraun2_075);

tilraun2_1 = [172 221 270 371 421 468];
tilraun2_1 = cntr2pix2mm(tilraun2_1);
```

tilraun 3

```
tilraun3 = [59 159 259 456 553 648];
tilraun3 = cntr2pix2mm(tilraun3);
```

tilraun 4

```
degMarker = 0:10:180;
lghtStr = [109.08 78.6 50.15 26.72 10.38 3.16 5.4 17.79 38.97 64.81 95.38
 121.48 164.36 164.14 171 169.45 157.37 138.72 112.17]*uA;
```

Tilraun 1 útreikningar

```
L = 9*cm;
Lerr = 0.1*cm;
d = 1880*nm;

n   = [ 2  1   0  -1   -2 ];
% skrifað
% x_n = [ 9.1 3.55 0 -3.5 -9.3 ]*cm;
% x_nerr = 0.05*cm;

% pixle mælt-
x_n = tilraun1;
x_nerr = 1*mm + 1/3*mm;
sin_th = x_n.*(L^2 +x_n.^2).^-0.5
sin_therr = sin_th.*L^2.*(L^2+x_n.^2).^-1.*(x_nerr./x_n+Lerr/L)

b = [sin_th(1)-sin_th(5)  sin_th(2)-sin_th(4)]
c = [4       2 ];
berr = b + [sin_therr(1)+sin_therr(5) sin_therr(2)+sin_therr(4)]
hrough = b./c

htrue = polyfit(n, sin_th, 1);
htrue = htrue(1)
```

```
sin_th =
  Columns 1 through 3
   -758.467419877006e-003   -405.714401757031e-003    0.00000000000000e+000
  Columns 4 through 5
    397.116792491347e-003    754.291339383777e-003
sin_therr =
  Columns 1 through 3
    521.378675233047e-006    7.54596466965025e-003                      NaN
  Columns 4 through 5
    15.1689264896168e-003    7.80515309042122e-003
b =
   -1.51275875926078e+000   -802.831194248377e-003
berr =
   -1.50443222749513e+000   -780.116303089110e-003
hrough =
   -378.189689815196e-003   -401.415597124189e-003
```

```
htrue =
   -382.834871276994e-003
```

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