# Kurzschluß-Schaltvorgang der geladenen, realen Koax-Leitung RG213/U nach dem numerischen Talbot-Verfahren
# jeweils der Graph mit den Lösungspunkten und der Graph als kubischer Spline

In[•]:=
```
ta = UnixTime[];
```
Unixzeit
```
ClearAll[U, Z0, Z1, Z2, l, Cs, Rs, lap, M, Zeit, Liste, te; td, Gs, Ls];
```
lösche alle
```
U = 100; Z0 = 50; Z1 = 0.01; Z2 = 1*^12; l = 1*^2; Cs = 101.049872*^-12; Rs = 6.56167979*^-3; x = 0;
Ls = Z0^2 * Cs;
Gs = Rs * Cs / Ls;
td = l * Sqrt[Ls * Cs];
```
Quadratwurzel
```
Talbot[Fs_, t_, N1_] := Module[{h, shift, ans, theta, k, z, dz},
```
Modul
```
  h = 2 * Pi / N1;
```
Kreiszahl π
```
  shift = 0;
  ans = 0;
  For[k = 0, k <= N1, k++,
```
For–Schleife
```
   theta = -Pi + (k + 1 / 2) * h;
```
Kreiszahl π
```
   z = shift + N1 / t * (0.5017 * theta * Cot[0.6407 * theta] - 0.6122 + 0.2645 * I * theta);
```
Kotangens imaginäre Einheit I
```
   dz = N1 / t * (-0.5017 * 0.6407 * theta / Sin[0.6407 * theta]^2 + 0.5017 * Cot[0.6407 * theta] + 0.2645 * I);
```
Sinus Kotangens imaginäre Einheit I
```
   ans = ans + Exp[z * t] * Fs[z] * dz;];
```
Exponentialfunktion
```
  Re[h / (2 * I * Pi) * ans]]
```
Realteil ··· Kreiszahl π

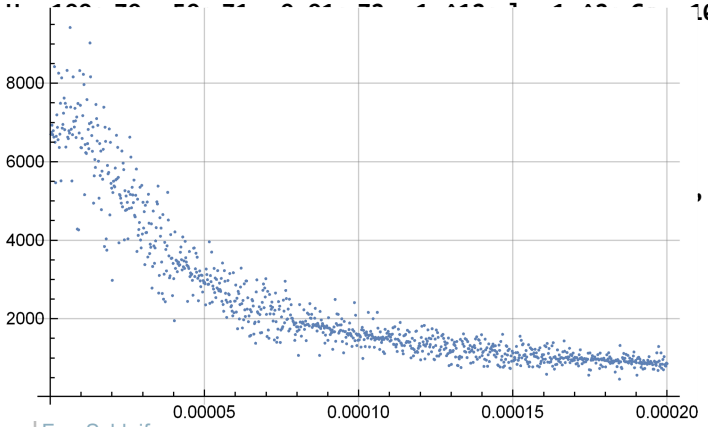
```
lap[p_] := -U / p * (Cosh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * (l - x)] + Z2 / Z0 * Sinh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * (l - x)]) /
```
Kos··· Quadratwurzel Sinu·· Quadratwurzel
```
    ((Z1 + Z2) * Cosh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * l] + (Z0 + Z1 * Z2 / Z0) * Sinh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * l]);
```

In[•]:=
```
ta = UnixTime[];
```
Unixzeit

```
ClearAll[U, Z0, Z1, Z2, l, Cs, Rs, lap, M, Zeit, Liste, te; td, Gs, Ls];
```
ClearAll: te; td is not a symbol or a string.

```
... 101.049872*^-12; Rs = 6.56167979*^-3; x = 0;
```

Out[•]=




```
... , k, z, dz},
```
For–Schleife

```
theta = -Pi + (k + 1 / 2) * h;
```
Kreiszahl π

```
z = shift + N1 / t * (0.5017 * theta * Cot[0.6407 * theta] - 0.6122 + 0.2645 * I * theta);
```
Kotangens imaginäre Einheit I

```
dz = N1 / t * (-0.5017 * 0.6407 * theta / Sin[0.6407 * theta]^2 + 0.5017 * Cot[0.6407 * theta] + 0.2645 * I);
```
Sinus Kotangens imaginäre Einheit I

```
ans = ans + Exp[z * t] * Fs[z] * dz;];
```
Exponentialfunktion

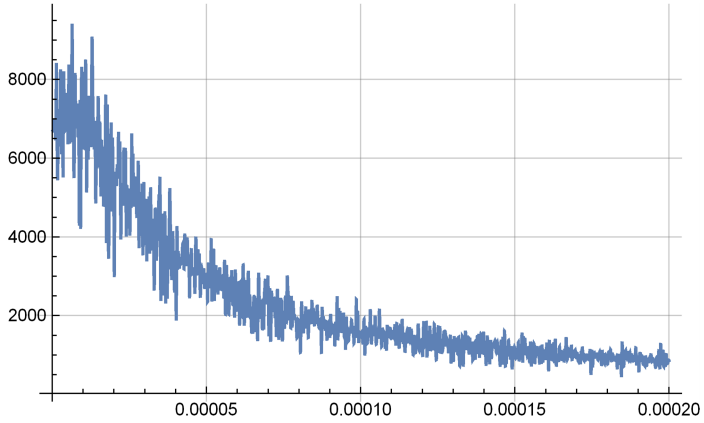
```
Re[h / (2 * I * Pi) * ans]]
```
Realteil ··· Kreiszahl π

```
lap[p_] := -U / p * (Cosh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * (l - x)] + Z2 / Z0 * Sinh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * (l - x)]) /
```
Kos··· Quadratwurzel Sinu·· Quadratwurzel

```
    ((Z1 + Z2) * Cosh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * l] + (Z0 + Z1 * Z2 / Z0) * Sinh[Sqrt[(Rs + p * Ls) * (Gs + p * Cs)] * l]);
```

In[ ]:=
```
ListLinePlot[Liste, InterpolationOrder → 3, PlotRange → All, GridLines → Automatic]
```
listenbezogene Liniengra··· | Ordnung der Interpolation | Koordinatenb··· | alle | Gitternetzlinien | automatisch

Out[ ]=




In[ ]:=
```
te = UnixTime[] - ta
```
Unixzeit

```
N[te / 60]
```
numerischer Wert

```
Max[Liste]
```
größtes Element

```
td
```

Out[ ]= 12

Out[ ]= 0.2

Out[ ]= 9419.48

Out[ ]= $5.05249 \times 10^{-7}$