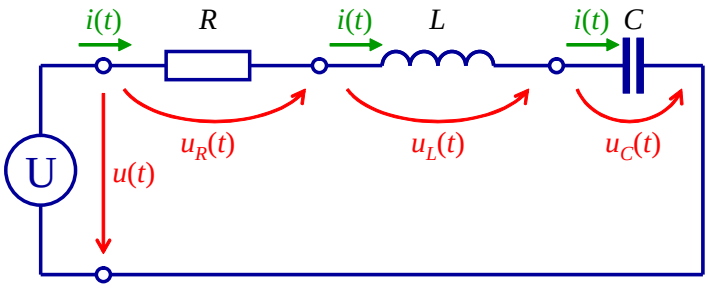
Eulerova metoda - RLC obvod

In[3557]:=
```
ClearAll["Global`*"];
```



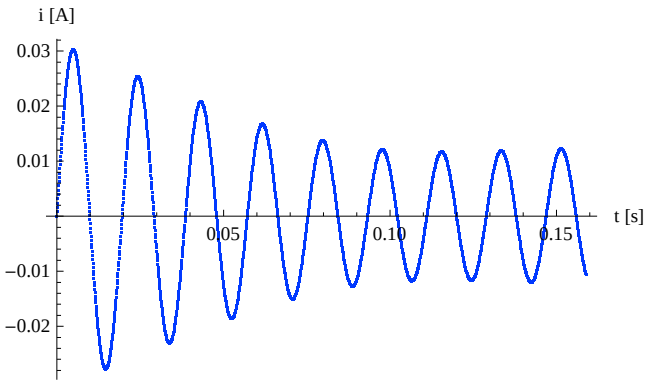
In[3558]:=
```
dos = {R → 6, c -> 10^-4, L -> 0.1};
r1 = u[t] == R * i[t] + L * i'[t] + uc[t];
r2 = i[t] == c * uc'[t];
rr = {r1, r2};
pat1 := {a_[t] :> a};
nezname = (Flatten[Cases[rr, _'[t], {0, ∞}]] // Union) /. pat1;
resder = Solve[rr /. pat1, nezname][[1]] /. pat1;
bezder =
  Complement[(Flatten[Cases[rr, _[t], {0, ∞}]] // Union) /. pat1, nezname] /. pat1;
vect = nezname /. resder;
g := Function[bezder // Evaluate, vect // Evaluate];
```

In[3568]:=
```
tau = 2 * Pi * √(L * c) /. dos;
Print["tau= ", tau, " s"]

vstup[t_] := .1 * Sin[2 * Pi * (1.1/tau) * t] + 1;
tmax = 8 tau;
n = 2000;
Δt = tmax/n;
h[{t_, {i_, uc_}}] := Module[
   {vectder},
   vectder = g[i, vstup[t], uc] /. dos;
   {t + Δt, {i, uc} + Δt * vectder}
  ];
pocstav = {0, {0, 0}};
reseni = NestList[h, pocstav, n];
proudy = reseni /. {t_, {i_, uc_}} :> {t, i};
napeti = reseni /. {t_, {i_, uc_}} :> {t, uc};
jak = {AxesOrigin → {0, 0}, PlotRange → All, PlotStyle → {Hue[0.63], PointSize[0.005]}};
jakproudy = {AxesLabel → {"t [s]", "i [A]"}};
jaknapeti = {AxesLabel → {"t [s]", "uc [V]"}};
ListPlot[proudy, Sequence @@ Union[jak, jakproudy]]
ListPlot[napeti, Sequence @@ Union[jak, jaknapeti]]
```

```
tau= 0.0198692 s
```

Out[3582]=



Out[3583]=