Vizualizace Parkovy Transformace - Indukčnosti 01

Purpose

Jednoduchá demonstrace Parkovy transformace

Description

Snaha o grafickou a vektorovou demonstraci tokových veličin ve statoru a rotoru synchronního stroje.

System

Sites of Interaction

System Parameters

$I_f = 1$
$L_{aFm} = 0.9$
$L_{a0} = 0.9$
$L_2 = 0.3$
$L_{ab0} = 0.9$
$L_{ff} = 2$
$L_{aDm} = 0.5$
$L_{aQm} = 0.5$
$K_d = 0.8165$
$K_q = 0.8165$
$K_0 = 0.5774$

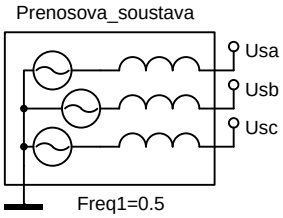
System excitation

Task

Assumptions

Solution

Model



Data

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*: Vizualizace Parkovy Transformace - Indukčnosti 01
*SYSTEM;
Prenosova_soustava > @PowerSource3f2 Usa,Usb,Usc,
  0 / Freq1=0.5;

Zatizeni /TAB/ 0,0, 3,0, 6,0.6, 10,0.6;

ZatUhel=Zatizeni(Time);
Theta=1Pi*Time+ZatUhel;

Ia=Usa/1e5;Ib=Usb/1e5;Ic=Usc/1e5;
If=1;

LaFm=0.9;
La0=0.9;
L2=0.3;
Lab0=0.9;
Lff=2;
LaDm=0.5;
LaQm=0.5;

LaF=LaFm*cos(Theta);
LbF=LaFm*cos(Theta-2Pi/3);
LcF=LaFm*cos(Theta+2Pi/3);

Laa=La0+L2*cos(2*(Theta));
Lbb=La0+L2*cos(2*(Theta-2Pi/3));
Lcc=La0+L2*cos(2*(Theta+2Pi/3));

Lab=-Lab0+L2*cos(2*(Theta+2Pi/3));
Lbc=-Lab0+L2*cos(2*(Theta));
Lca=-Lab0+L2*cos(2*(Theta-2Pi/3));

LaD=LaDm*cos(Theta);
LbD=LaDm*cos(Theta-2Pi/3);
LcD=LaDm*cos(Theta+2Pi/3);

LaQ=LaQm*cos(Theta+1Pi/2);
LbQ=LaQm*cos(Theta-2Pi/3+1Pi/2);
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LcQ=LaQm*cos(Theta+2Pi/3+1Pi/2);

FiaS=Laa*Ia+Lab*Ib+Lca*Ic;
FibS=Lab*Ia+Lbb*Ib+Lbc*Ic;
FicS=Lca*Ia+Lbc*Ib+Lcc*Ic;

TokStatorX=FiaS*cos(0)+FibS*cos(2Pi/3)+FicS*cos(-2Pi/3);
TokStatorY=FiaS*sin(0)+FibS*sin(2Pi/3)+FicS*sin(-2Pi/3);

Fia=FiaS+LaF*If;
Fib=FibS+LbF*If;
Fic=FicS+LcF*If;

TokRotorX=Lff*If*cos(Theta-1Pi/2);
TokRotorY=Lff*If*sin(Theta-1Pi/2);

Kd=0.8165; : sqrt(2/3)
Kq=0.8165; : sqrt(2/3)
K0=0.5774; : sqrt(1/3)

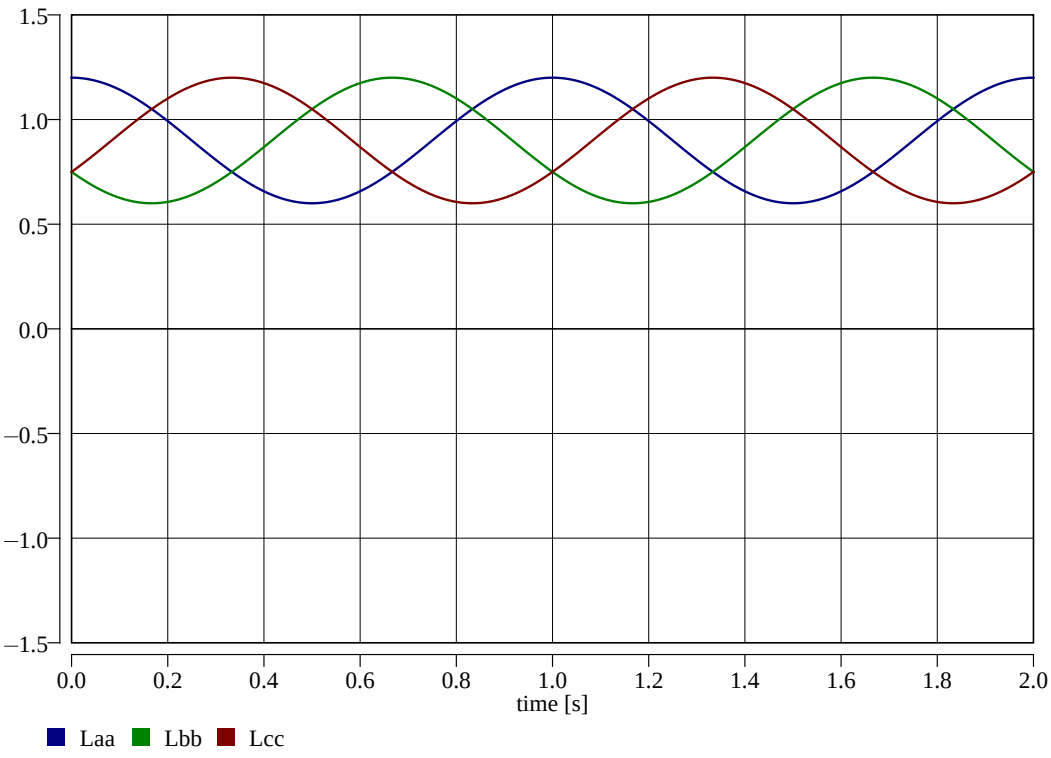
Fid= Kd*(FiaS*cos(Theta)+FibS*cos(Theta-2Pi/3)+FicS*cos(Theta+2Pi/3));
Fiq=-Kq*(FiaS*sin(Theta)+FibS*sin(Theta-2Pi/3)+FicS*sin(Theta+2Pi/3));
Fi0= K0*(FiaS+FibS+FicS);

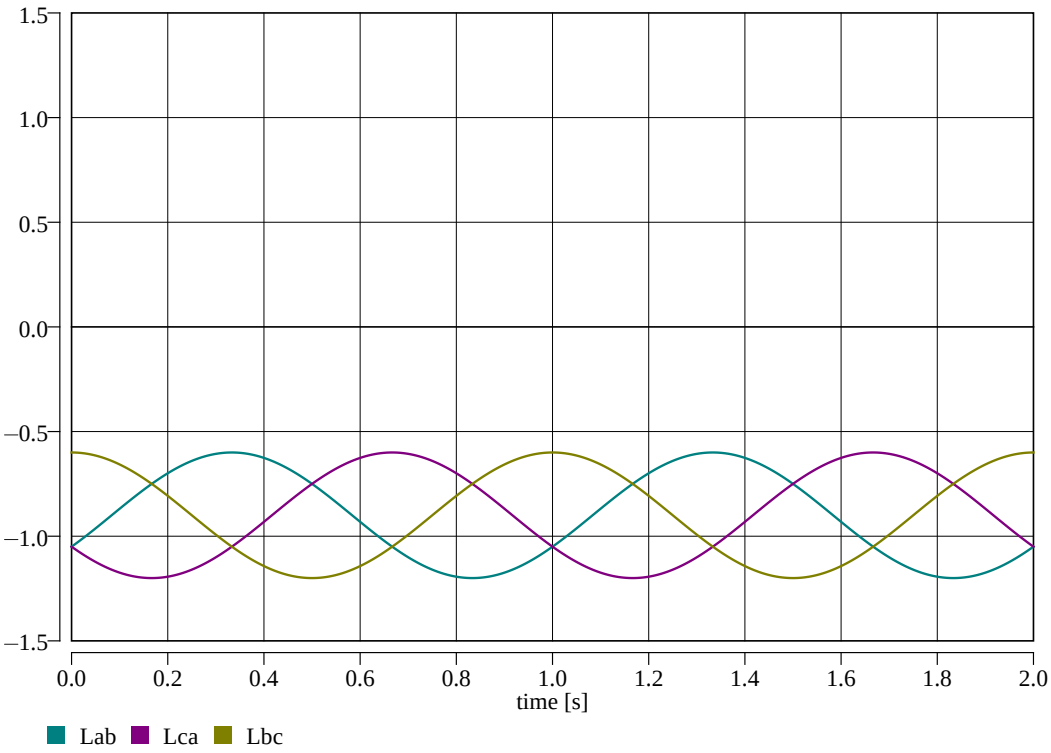
FidX=Fiq*cos(Theta+1Pi/2);
FidY=Fiq*sin(Theta+1Pi/2);
FiqX=Fid*cos(Theta);
FiqY=Fid*sin(Theta);

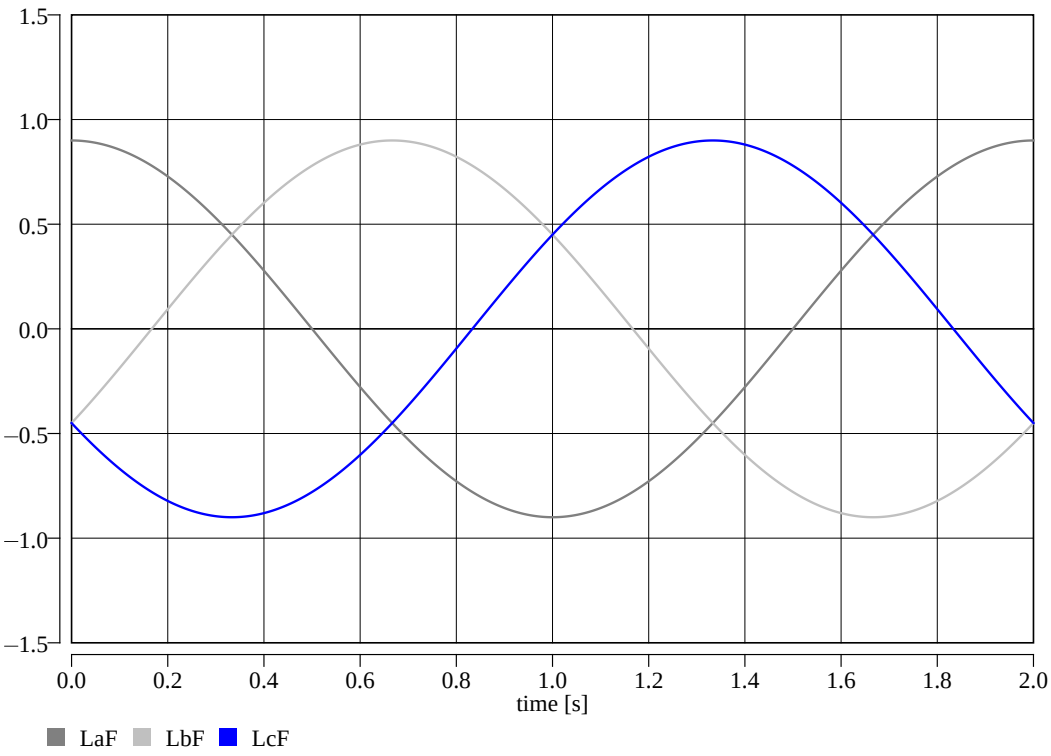
TokStator=sqrt(TokStatorX*TokStatorX+TokStatorY*TokStatorY);
TokStatorUhel=ATAN(TokStatorY/TokStatorX);

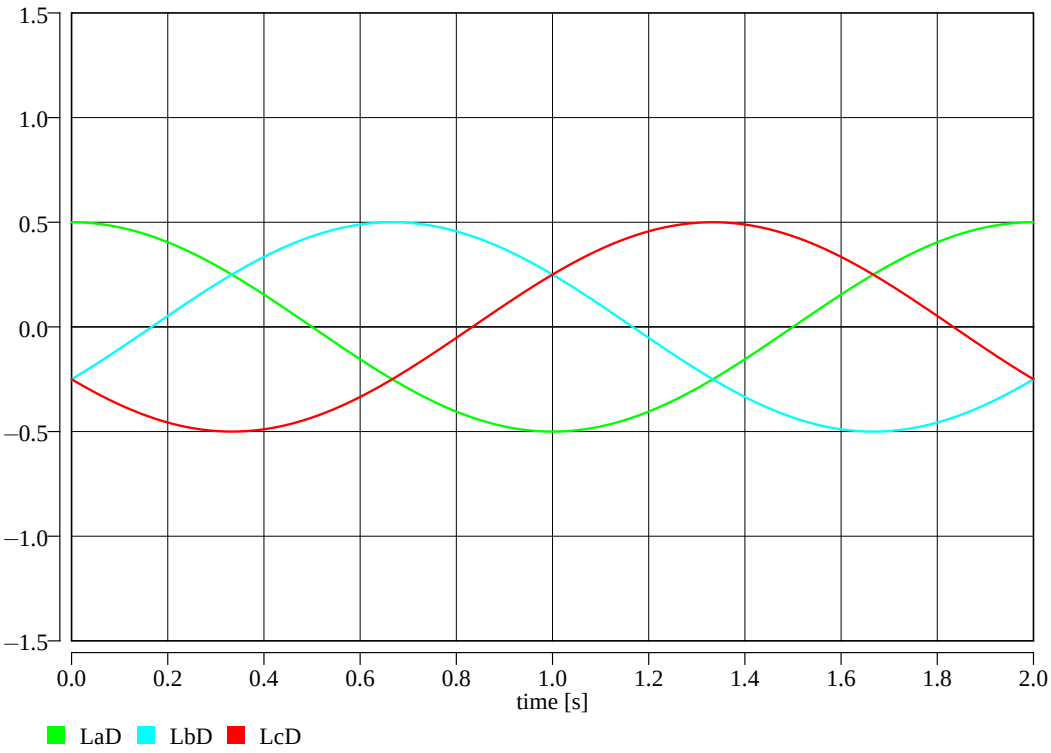
TokRotor=sqrt(TokRotorX*TokRotorX+TokRotorY*TokRotorY);
TokRotorUhel=ATAN(TokRotorY/TokRotorX);

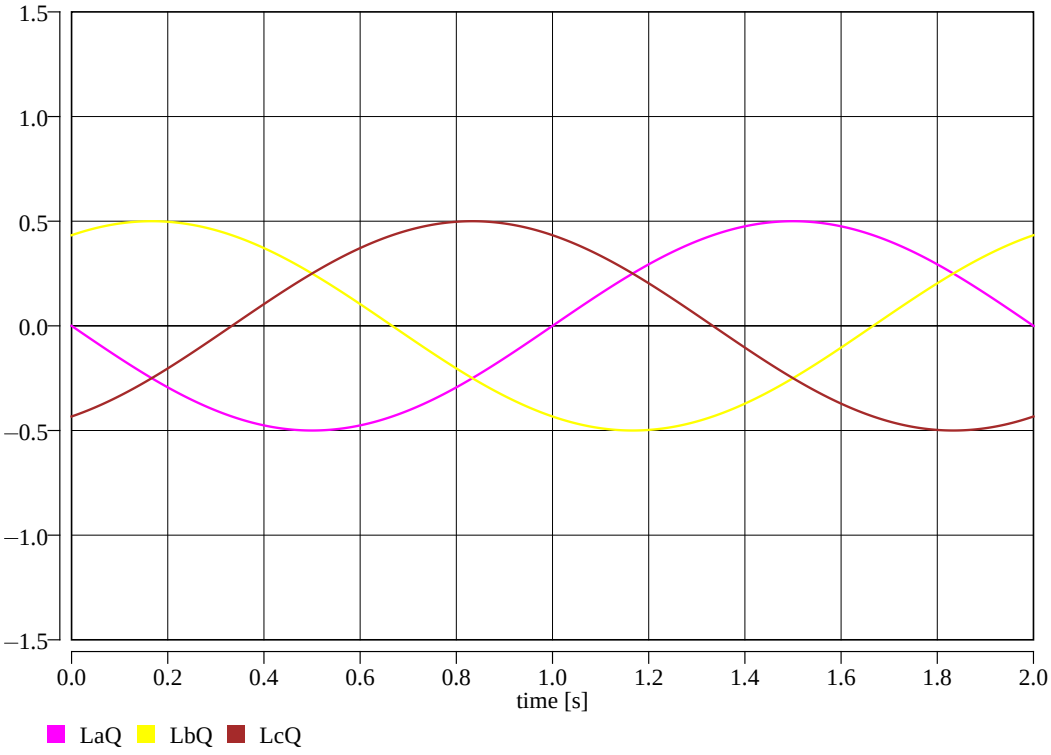
*TR;
TR 0 2;
PRINT(1000) Laa, Lbb, Lcc, Lab, Lca, Lbc, LaF, LbF, LcF,
            LaD, LbD, LcD, LaQ, LbQ, LcQ;
RUN;
*END;
```

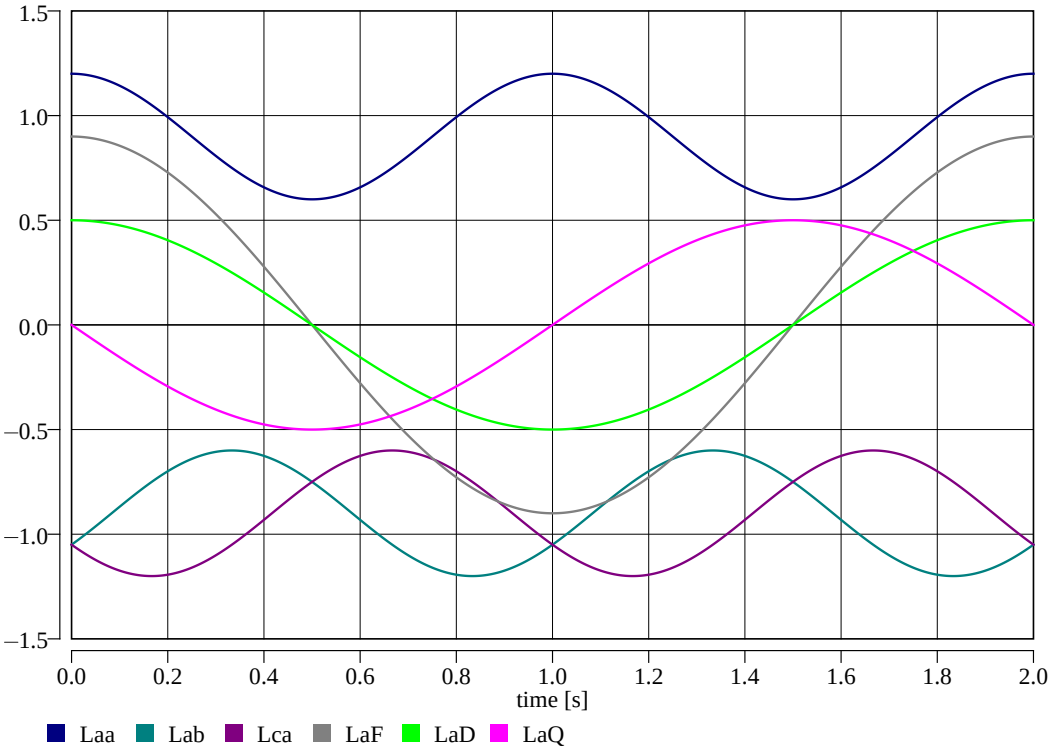

1.5
1.0
0.5
0.0
–0.5
–1.0
–1.5
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
time [s]
Laa Lbb Lcc


1.5
1.0
0.5
0.0
–0.5
–1.0
–1.5
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
time [s]
Lab Lca Lbc


1.5
1.0
0.5
0.0
–0.5
–1.0
–1.5
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
time [s]
LaF
LbF
LcF


1.5
1.0
0.5
0.0
–0.5
–1.0
–1.5
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
time [s]
LaD
LbD
LcD


1.5
1.0
0.5
0.0
–0.5
–1.0
–1.5
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
time [s]
LaQ LbQ LcQ


1.5
1.0
0.5
0.0
–0.5
–1.0
–1.5
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
time [s]
Laa Lab Lca LaF LaD LaQ

Origin

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Last Update

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