'pst-circ'
A PSTricks package for drawing electic circuits

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Abstract: 'pst-circ' is a PSTricks package to draw easily electric circuits. Most dipoles, tripoles and quadrupoles used in classical electrotechnic circuits are ...

Contents

1 Introduction

2 Usage

2.1 Parameters

There are specific paramaters defined to change easily the behaviour of the pst-circ objects you are drawing.

`intensity` (**boolean**): (*default: false*)

`intensitylabel` (**string**): (*default: \empty*)

`intensitylabeloffset` (**dimension**): (*default: 0.5*)

`intensitycolor` (**PSTricks color**): (*default: black*)

`intensitylabelcolor` (**PSTricks color**): (*default: black*)

`intensitywidth` (**dimension**): (*default: \pslinewidth*)

`tension` (**boolean**): (*default: false*)

`tensionlabel` (**string**): (*default: \empty*)

`tensionoffset` (**dimension**): (*default: 1*)

`tensionlabeloffset` (**dimension**): (*default: 1.2*)

`tensioncolor` (**PSTricks color**): (*default: black*)

`tensionlabelcolor` (**PSTricks color**): (*default: black*)

`tensionwidth` (**dimension**): (*default: \pslinewidth*)

`labeloffset` (**dimension**): (*default: 0.7*)

labelangle (**PSTricks label angle**): (*default: 0*)

dipoleconvention: (*default: receptor*)

directconvetion (**boolean**): (*default: true*)

dipolestyle (**string**): (*default: normal*)

variable (**boolean**): (*default: false*)

parallel (**boolean**): (*default: false*)

parallelarm (**dimension**): (*default: 1.5*)

parallelsep (**real**): (*default: 0*)

parallelnode (**boolean**): (*default: false*)

intersect (**boolean**): (*default: false*)

intersectA (**node**):

intersectB (**node**):

OAinvert (**boolean**): (*default: true*)

OAperfect (**boolean**): (*default: true*)

OAiplus (**boolean**): (*default: false*)

OAiminus (**boolean**): (*default: false*)

OAiout (**boolean**): (*default: false*)

OAipluslabel (**string**): (*default: \empty*)

OAiminuslabel (**string**): (*default: \empty*)

OAioutlabel (**string**): (*default: \empty*)

transistorinvert (**boolean**): (*default: false*)

transistoribase (**boolean**): (*default: false*)

transistoricollector (**boolean**): (*default: false*)

transistoriemitter (**boolean**): (*default: false*)

transistoribaselabel (**string**): (*default: \empty*)

transistoricollectorlabel (**string**): (*default: \empty*)

transistoriemitterlabel (**string**): (*default: \empty*)

transistortype (**string**): (*default: PNP*)

primarylabel (**string**): (*default: \empty*)

secondarylabel (**string**): (*default: \empty*)

transformeriprimary (**boolean**): (*default: false*)

transformerisecondary (**boolean**): (*default: false*)

transformeriprimarylabel (**string**): (*default: \empty*)

transformerisecondarylabel (**string**): (*default: \empty*)

tripolestyle (**string**): (*default: normal*)
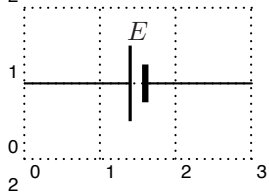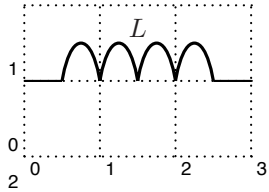
3 Macros

3.1 Dipole macros
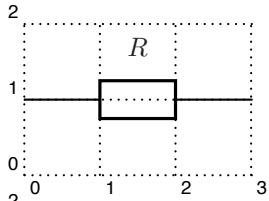
```
\pnode(0,1){A}
\pnode(3,1){B}
\resistor(A)(B){$R$}
```
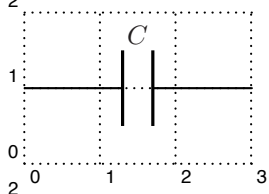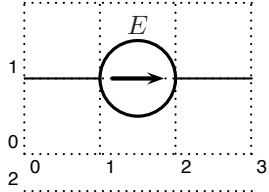
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor(A)(B){$C$}
```
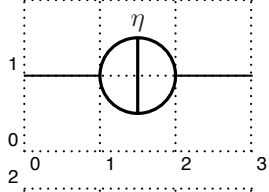
```
\pnode(0,1){A}
\pnode(3,1){B}
\battery(A)(B){$E$}
```
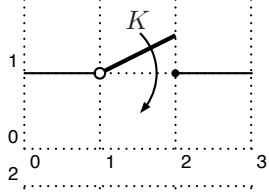
```
\pnode(0,1){A}
\pnode(3,1){B}
\coil(A)(B){$L$}
```
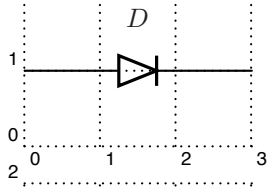
```
\pnode(0,1){A}
\pnode(3,1){B}
\Ucc(A)(B){$E$}
```
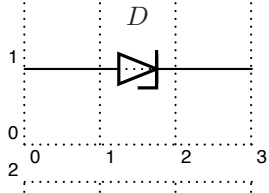
```
\pnode(0,1){A}
\pnode(3,1){B}
\Icc(A)(B){$\eta$}
```
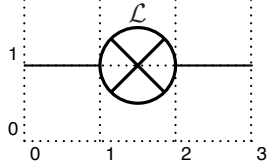
```
\pnode(0,1){A}
\pnode(3,1){B}
\switch(A)(B){$K$}
```
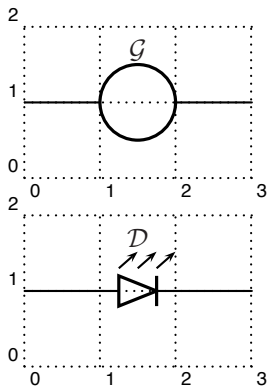
```
\pnode(0,1){A}
\pnode(3,1){B}
\diode(A)(B){$D$}
```

```
\pnode(0,1){A}
\pnode(3,1){B}
\Zener(A)(B){$D$}
```

```
\pnode(0,1){A}
\pnode(3,1){B}
\lamp(A)(B){$\mathcal L$}
```

```
\pnode(0,1){A}
\pnode(3,1){B}
\circledipole(A)(B){$\mathcal G$}
```

```
\pnode(0,1){A}
\pnode(3,1){B}
\LED(A)(B){$\mathcal D$}
```

3.2   Tripole macros

Obviously, tripoles are not node connections. So **'pst-circ'** tries its best to adjust the position of the tripole regarding the three nodes. Internally, the connections are done by the \ncangle pst-node macro. However, the auto-positionning and the auto-connections are not always well chosen[1], so don't try to use tripole macros in strange situations!
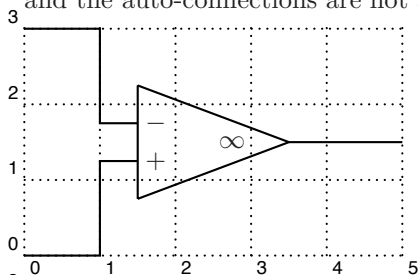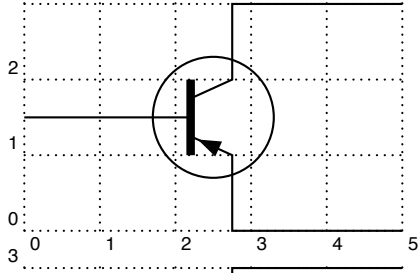
```
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(5,1.5){C}
\OA(B)(A)(C)
```
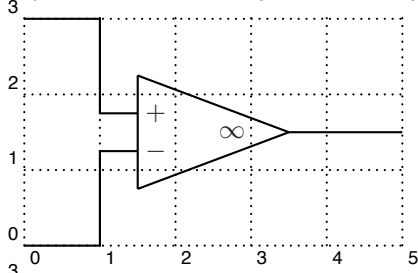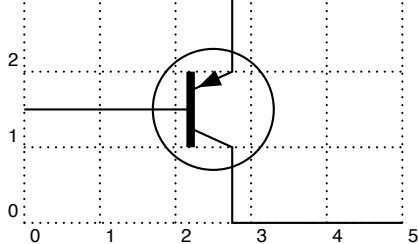
```
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(5,1.5){C}
\OA[OAinvert=false](B)(A)(C)
```
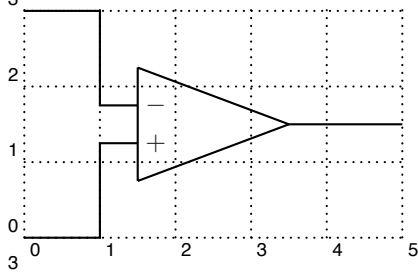
```
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(5,1.5){C}
\OA[OAperfect=false](B)(A)(C)
```
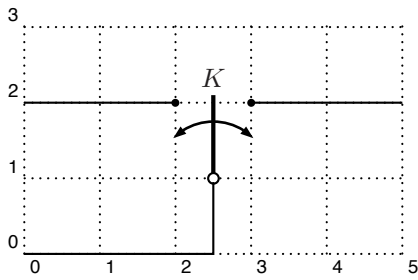
```
\pnode(0,1.5){A}
\pnode(5,3){B}
\pnode(5,0){C}
\transistor(A)(B)(C)
```
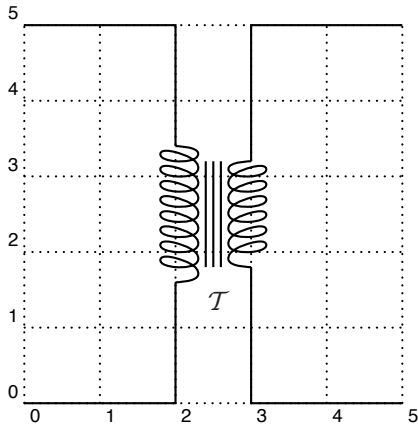
```
\pnode(0,1.5){A}
\pnode(5,3){B}
\pnode(5,0){C}
\transistor[transistorinvert](A)(B)(C)
```

---

[1]This is something I'm working on. I think that auto-positionning and auto-connections should be done at PostScript level and not at PSTricks level. If someone has any ideas, please mail me.

```
\pnode(0,2){A}
\pnode(5,2){B}
\pnode(0,0){C}
\Tswitch(A)(B)(C){$K$}
```
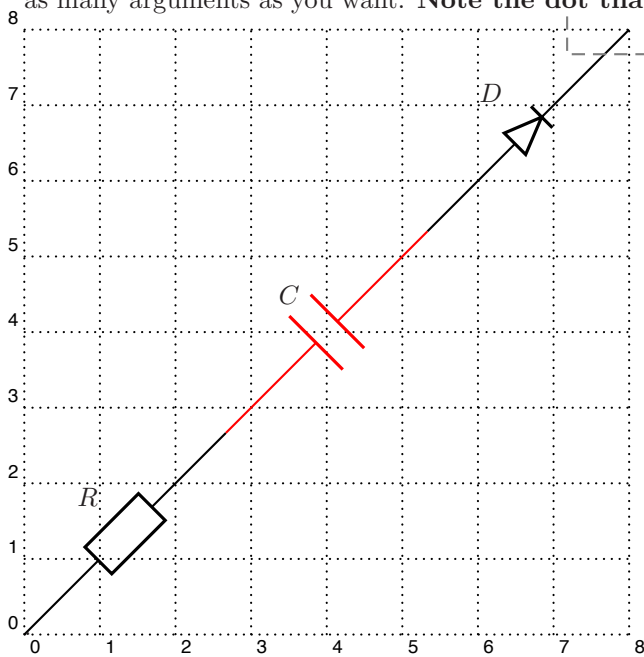
3.3   Quadrupole macros

```
\pnode(0,5){A}
\pnode(0,0){B}
\pnode(5,5){C}
\pnode(5,0){D}
\transformer(A)(B)(C)(D){$\mathcal T$}
```

3.4   Multidipole

\multidipole is a macro that allows multiple dipoles to be drawn between two specified nodes. \multidipole takes as many arguments as you want. **Note the dot that is after the last dipole.**

```
\pnode(0,0){A}
\pnode(8,8){B}
\multidipole(A)(B)\resistor{$R$}%
   \capacitor[linecolor=red]{$C$}%
   \diode{$D$}.
```

Important: for the time being, \multidipole takes optional arguments but does not restore original values. We recommand not using it.

3.5   Wire
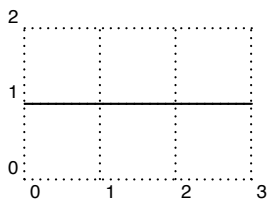
```
\pnode(0,1){A}
\pnode(3,1){B}
\wire(A)(B)
```

3.6 Tension

```
\pnode(0,1){A}
\pnode(3,1){B}
\tension(A)(B){$u$}
```

4 Parameters

4.1 Label parameters

```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[labeloffset=0](A)(B){$R$}
```

```
\pnode(0,0){A}
\pnode(3,2){B}
\resistor[labelangle=:U](A)(B){$R$}
```

```
\pnode(0,0){A}
\pnode(3,2){B}
\resistor[labelangle=0](A)(B){$R$}
```
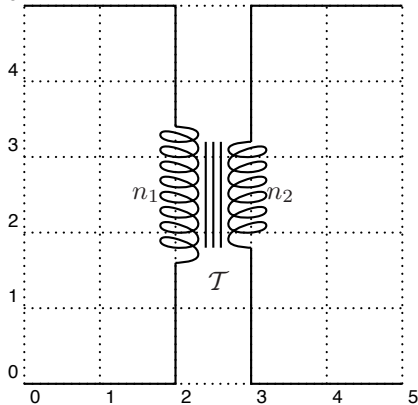
```
\pnode(0,5){A}
\pnode(0,0){B}
\pnode(5,5){C}
\pnode(5,0){D}
\transformer[primarylabel=$n_1$,
  secondarylabel=$n_2$](A)(B)(C)(D){$\mathcal T$}
```
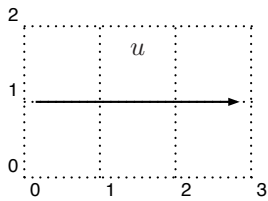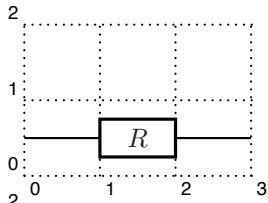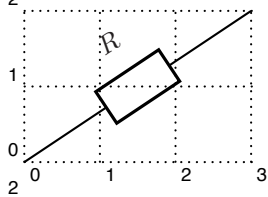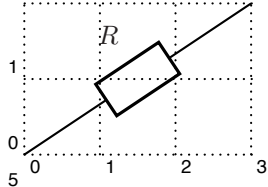
4.2 Intensity and tension parameters

If the intensity parameter is set to true, an arrow is drawn on the wire connecting one of the node to the dipole. If the tension parameter is set to true, an arrow is drawn parallel to the dipole.

The way those arrows are drawn is set by dipoleconvention and directconvention parameters. dipoleconvention can take two values : generator or receptor. directconvention is a boolean.
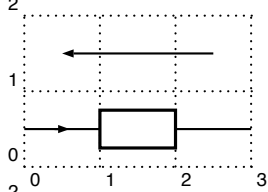
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensity,tension](A)(B){}
```
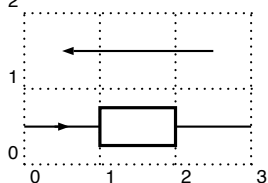
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensity,tension,
  dipoleconvention=receptor](A)(B){}
```
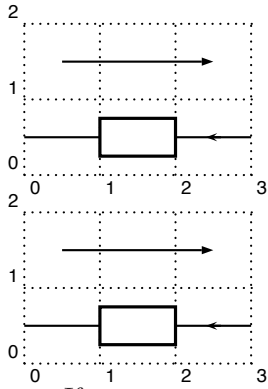
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensity,tension,
  directconvention=false](A)(B){}
```

```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensity,tension,
  dipoleconvention=receptor,directconvention=false](A)(B){}
```

If `intensitylabel` is set to an non empty argument, then `intensity` is automatically set to true. If `tensionlabel` is set to an non empty argument, then `tension` is automatically set to true.
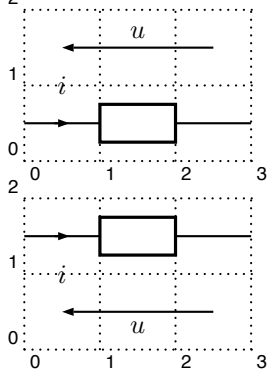
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensitylabel=$i$,tensionlabel=$u$](A)(B){}
```
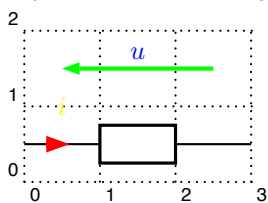
```
\pnode(0,1.5){A}
\pnode(3,1.5){B}
\resistor[intensitylabel=$i$,intensitylabeloffset=-0.5,
  tensionlabel=$u$,tensionlabeloffset=-1.2,
  tensionoffset=-1](A)(B){}
```

```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensitylabel=$i$,intensitywidth=3\pslinewidth,
  intensitycolor=red,intensitylabelcolor=yellow,
  tensionlabel=$u$,tensionwidth=2\pslinewidth,
  tensioncolor=green,tensionlabelcolor=blue](A)(B){}
```

Some specific intensity parameter are set for tripoles and quadrupoles.
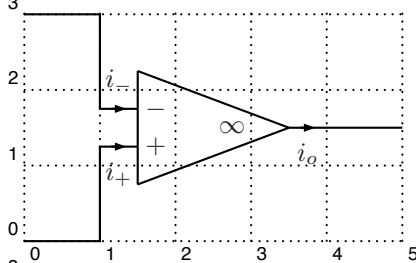
```
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(5,1.5){C}
\OA[OAipluslabel=$i_+$,
  OAiminuslabel=$i_-$,
  OAioutlabel=$i_o$](B)(A)(C)
```
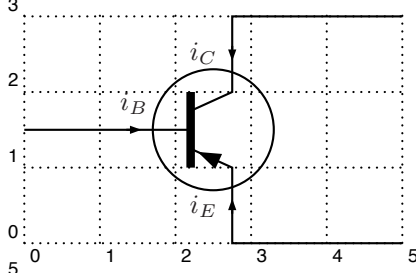
```
\pnode(0,1.5){A}
\pnode(5,3){B}
\pnode(5,0){C}
\transistor[transistoribaselabel=$i_B$,
  transistoricollectorlabel=$i_C$,
  transistoriemitterlabel=$i_E$](A)(B)(C)
```
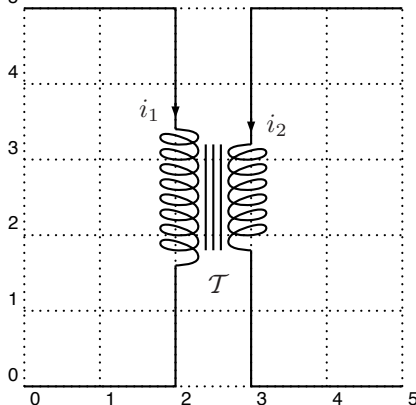
```
\pnode(0,5){A}
\pnode(0,0){B}
\pnode(5,5){C}
\pnode(5,0){D}
\transformer[transformeriprimarylabel=$i_1$,
  transformerisecondarylabel=$i_2$]%
  (A)(B)(C)(D){$\mathcal T$}
```

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4.3 Parallel parameters

If the `parallel` parameter is set to `true`, the dipole is drawn parallel to the line connecting the nodes.
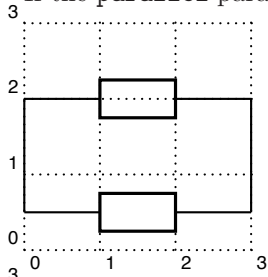
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor(A)(B){}
\resistor[parallel](A)(B){}
```
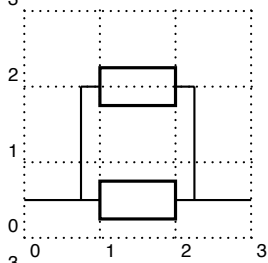
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor(A)(B){}
\resistor[parallel,parallelsep=.5](A)(B){}
```
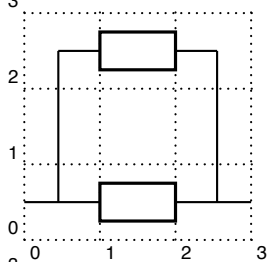
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor(A)(B){}
\resistor[parallel,parallelsep=.3,
  parallelarm=2](A)(B){}
```
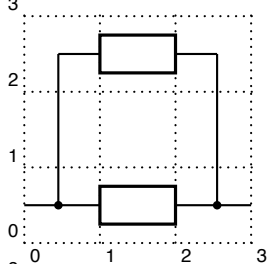
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor(A)(B){}
\resistor[parallel,parallelsep=.3,
  parallelarm=2,parallelnode](A)(B){}
```
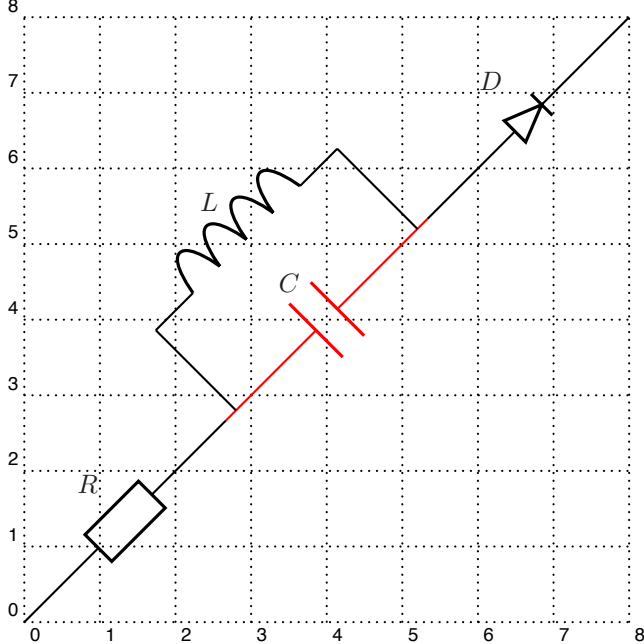
```
\pnode(0,0){A}
\pnode(8,8){B}
\multidipole(A)(B)\resistor{$R$}%
  \capacitor[linecolor=red]{$C$}%
  \coil[parallel,parallelsep=.1]{$L$}%
  \diode{$D$}.
```

Note: when using parallel `parameter` with `\multidipole`, it must not be set for the first dipole.

4.4   Wire parameters
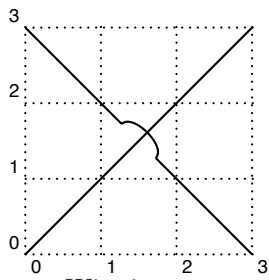
```
\pnode(0,0){A}
\pnode(3,3){B}
\pnode(0,3){C}
\pnode(3,0){D}
\wire(A)(B)
\wire[intersect,intersectA=A,intersectB=B](C)(D)
```

Wire intersect parameters work also with `\multidipole`.
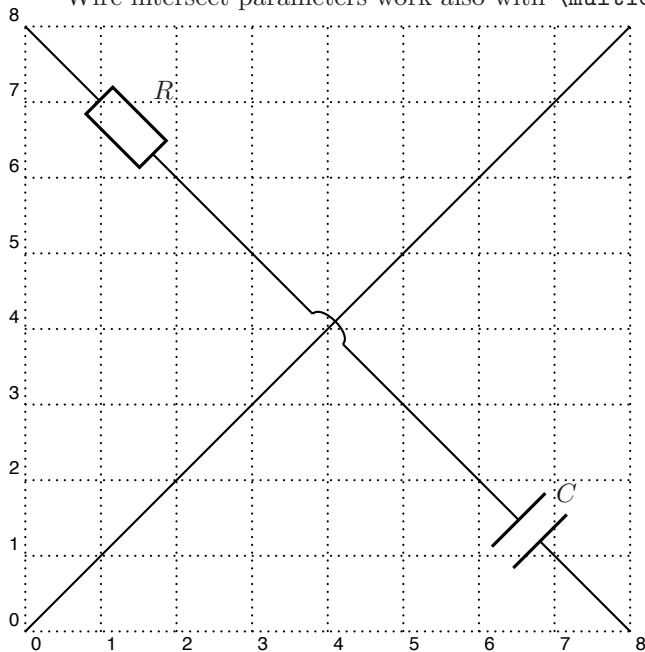
```
\pnode(0,0){A}
\pnode(8,8){B}
\pnode(0,8){C}
\pnode(8,0){D}
\wire(A)(B)
\multidipole(C)(D)\resistor{$R$}%
  \wire[intersect,intersectA=A,intersectB=B]%
  \capacitor{$C$}.
```

4.5   Dipole style parameters
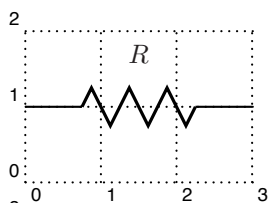
```
\pnode(0,1){A}
\pnode(3,1){B}
\resistor[dipolestyle=zigzag](A)(B){$R$}
```
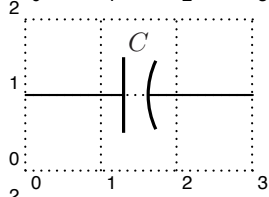
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor[dipolestyle=chemical](A)(B){$C$}
```
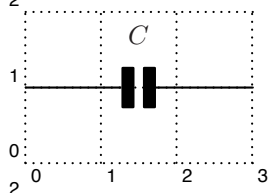
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor[dipolestyle=elektor](A)(B){$C$}
```
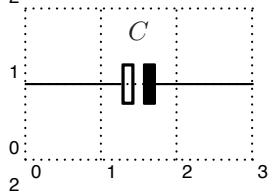
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor[dipolestyle=elektorchemical](A)(B){$C$}
```
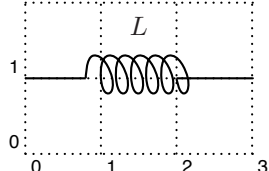
```
\pnode(0,1){A}
\pnode(3,1){B}
\coil[dipolestyle=curved](A)(B){$L$}
```

```
\pnode(0,1){A}
\pnode(3,1){B}
\coil[dipolestyle=elektor](A)(B){$L$}
```
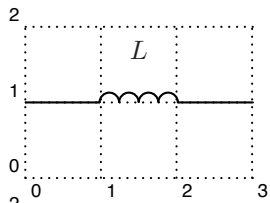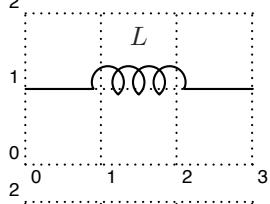
```
\pnode(0,1){A}
\pnode(3,1){B}
\coil[dipolestyle=elektorcurved](A)(B){$L$}
```
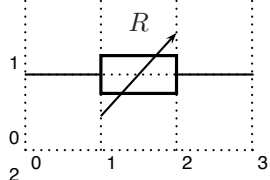
```
\pnode(0,1){A}
\pnode(3,1){B}
\resistor[variable](A)(B){$R$}
```
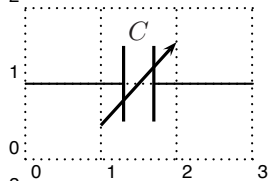
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor[variable](A)(B){$C$}
```

```
\pnode(0,1){A}
\pnode(3,1){B}
\coil[variable](A)(B){$L$}
```
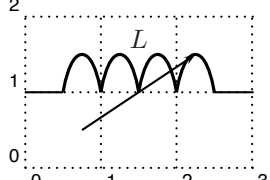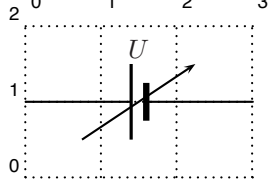
```
\pnode(0,1){A}
\pnode(3,1){B}
\battery[variable](A)(B){$U$}
```
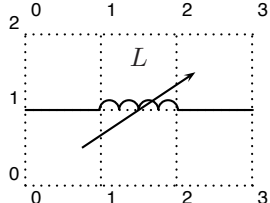
```
\pnode(0,1){A}
\pnode(3,1){B}
\coil[dipolestyle=elektor,variable](A)(B){$L$}
```

4.6 Tripole style parameters
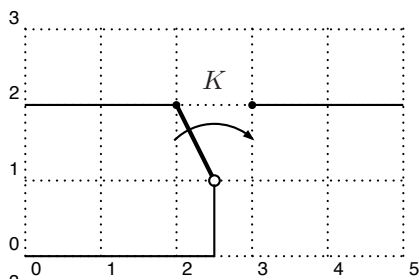
```
\pnode(0,2){A}
\pnode(5,2){B}
\pnode(0,0){C}
\Tswitch[tripolestyle=left](A)(B)(C){$K$}
```
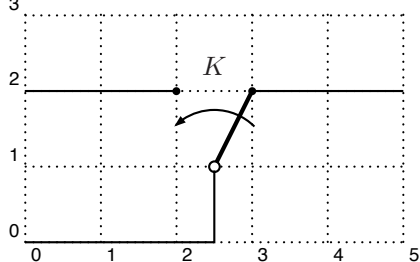
```
\pnode(0,2){A}
\pnode(5,2){B}
\pnode(0,0){C}
\Tswitch[tripolestyle=right](A)(B)(C){$K$}
```
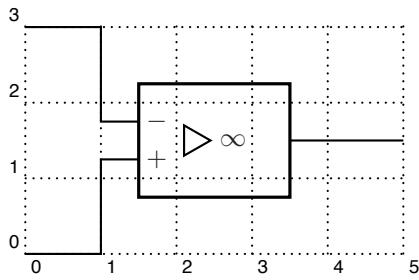
```
\pnode(0,3){A}
\pnode(0,0){B}
\pnode(5,1.5){C}
\OA[tripolestyle=french](A)(B)(C)
```

5 Examples
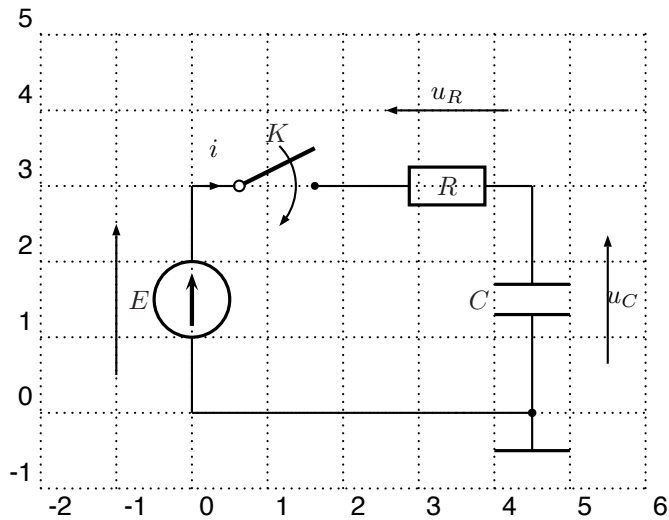

```
\begin{pspicture}(-1.5,-1)(6,5)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(4.5,3){C}
\pnode(4.5,0){D}
% Dipole node connection
\Ucc[tension,dipoleconvention=generator](A)(B){$E$}
\multidipole(B)(C)%
   \switch[intensitylabel=$i$]{$K$}%
   \resistor[labeloffset=0,tensionlabel=$u_R$]{$R$}.
\capacitor[tensionlabel={$u_C$},
   tensionlabeloffset=-1.2,tensionoffset=-1,
   directconvention=false](D)(C){$C$}
% Wire to complete circuit
\wire(A)(D)
% Ground
\ground(D)
\end{pspicture}
```
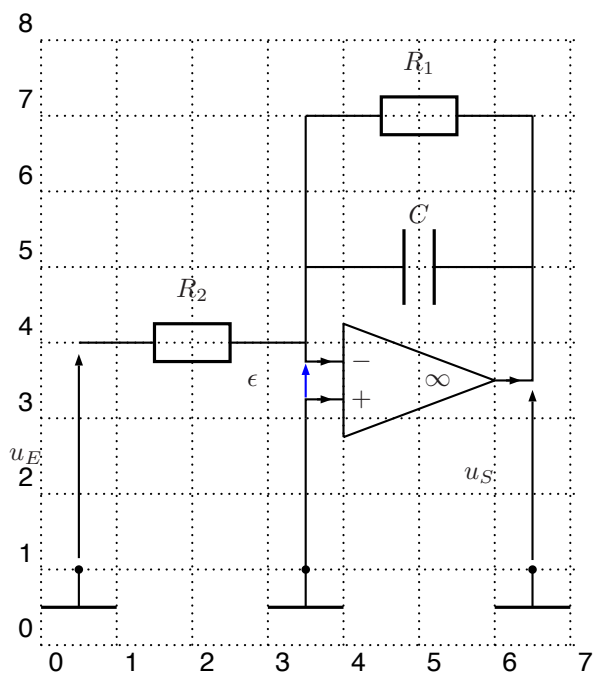


```
\begin{pspicture}(-0.5,0)(7,8)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\pnode(0.5,1){A}
\pnode(3.5,1){B}
\pnode(6.5,1){C}
\pnode(0.5,4){D}
\pnode(3.5,4){Minus}
\pnode(3.5,3){Plus}
\pnode(6.5,5){S}
\pnode(3.5,5){E}
% Dipole node connections
\resistor(D)(Minus){$R_2$}
\capacitor(E)(S){$C$}
\resistor[parallel,parallelarm=2](E)(S){$R_1$}
\OA[intensity](Minus)(Plus)(S)
% Wires
\wire(Minus)(E)
\wire(Plus)(B)
% Tensions
\tension(A)(D){$u_E$}
\makeatletter % (special tricks see below)
\tension(C)(S@@){$u_S$}
\tension[linecolor=blue](Plus@@)(Minus@@){$\epsilon$}
\makeatother
% Grounds
\ground(A)
\ground(B)
\ground(C)
\end{pspicture}
```
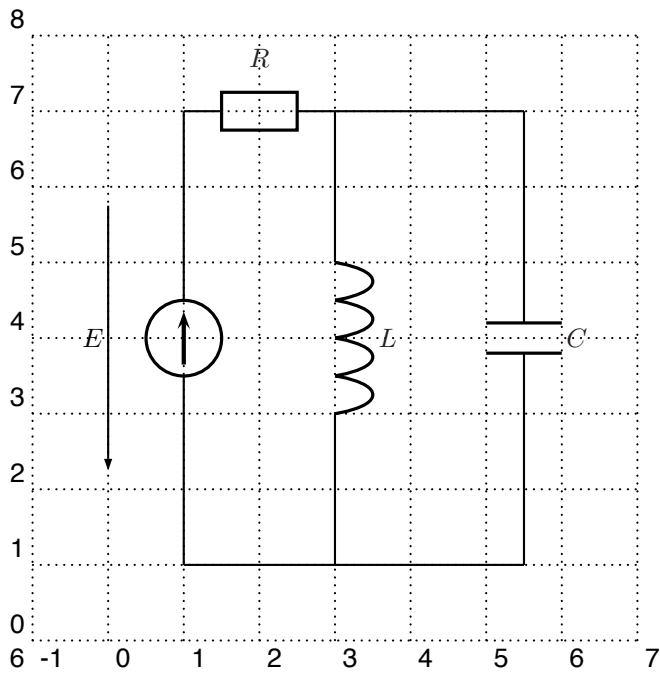
```
\begin{pspicture}(-1,0)(7,8)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\pnode(1,1){A}
\pnode(1,7){B}
\pnode(3,1){C}
\pnode(3,7){D}
% Dipole node connections
\Ucc[tensionlabel=$E$](A)(B){}
\resistor(B)(D){$R$}
\coil(D)(C){$L$}
\capacitor[parallel,parallelarm=2.5](D)(C){$C$}
% Wire
\wire(A)(C)
\end{pspicture}
```
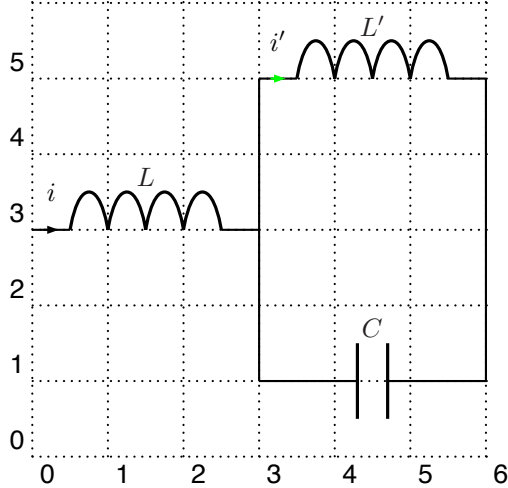


```
\begin{pspicture}(6,6)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\pnode(0,3){A}
\pnode(3,3){B}
\pnode(6,3){C}
% Dipole node connections
\coil[intensitylabel=$i$](A)(B){$L$}
\coil[intensitylabel=$i'$,intensitycolor=green,%
  parallel,parallelarm=2](B)(C){$L'$}
\capacitor[parallel,parallelarm=-2](B)(C){$C$}
\end{pspicture}
```



```
\begin{pspicture}(6,6)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\pnode(0,0){A}\pnode(6,0){B}
\pnode(0.3,4){Cprime}\pnode(5.7,4){Dprime}
\pnode(2.5,4){Gprime}\pnode(2.5,0){Hprime}
\pnode(0,4){C}\pnode(6,4){D}
\pnode(0.3,6){E}\pnode(5.7,6){F}
\pnode(4,6){G}\pnode(4,0){H}
\multidipole(G)(H)%
  \wire[intersect,
    intersectA=C,intersectB=D]
  \resistor{$R'_3$}.
\resistor(E)(G){$R'_1$}
\resistor(G)(F){$R'_2$}
\multidipole(C)(D)\resistor{$R_1$}%
  \wire\resistor{$R_2$}.
\wire(A)(B)\wire(Cprime)(E)
\wire(Dprime)(F)
\resistor(Hprime)(Gprime){$R_3$}
\end{pspicture}
```

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```
\begin{pspicture}(9,11)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\pnode(0,0){A}
\pnode(9,0){B}
\pnode(0,6){C}
\pnode(9,6){D}
\pnode(4.5,1){E}
\pnode(4.5,10.5){F}
%
\switch(A)(C){$K$}
\multidipole(A)(B)\resistor{$R$}%
  \battery[intensitylabel=$i$]{$V$}.
\wire(B)(D)
\multidipole(C)(D)\diode{$D$}\wire.
\resistor[tensionlabel=$U_1$](C)(F){$R_1$}
\resistor(C)(E){$R_4$}
\capacitor[parallel,parallelarm=1.2,
  parallelsep=1.5](C)(E){$C_2$}
\coil(E)(D){$L$}
\capacitor[parallel,parallelarm=1.2,
  parallelsep=1.5](E)(D){$C_3$}
\capacitor[tensionlabel=$U_2$](F)(D){$C_1$}
\multidipole(E)(F)\wire%
  \wire[intersect,
  intersectA=C,intersectB=D]%
  \circledipole[labeloffset=-0.7]{$E$}%
  \resistor[parallel,
    parallelsep=.6,parallelarm=.8]{$R$}.
\end{pspicture}
```
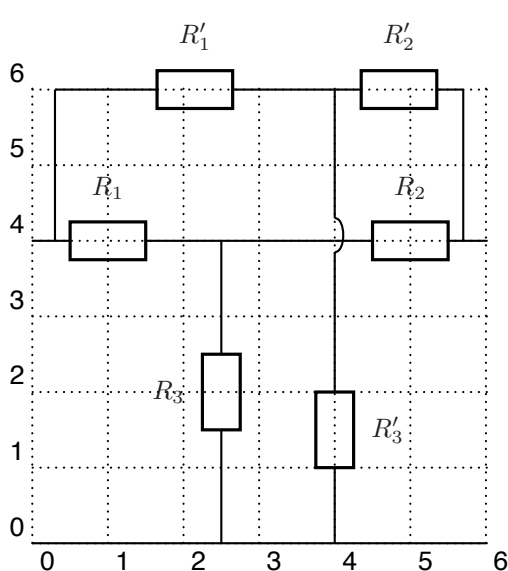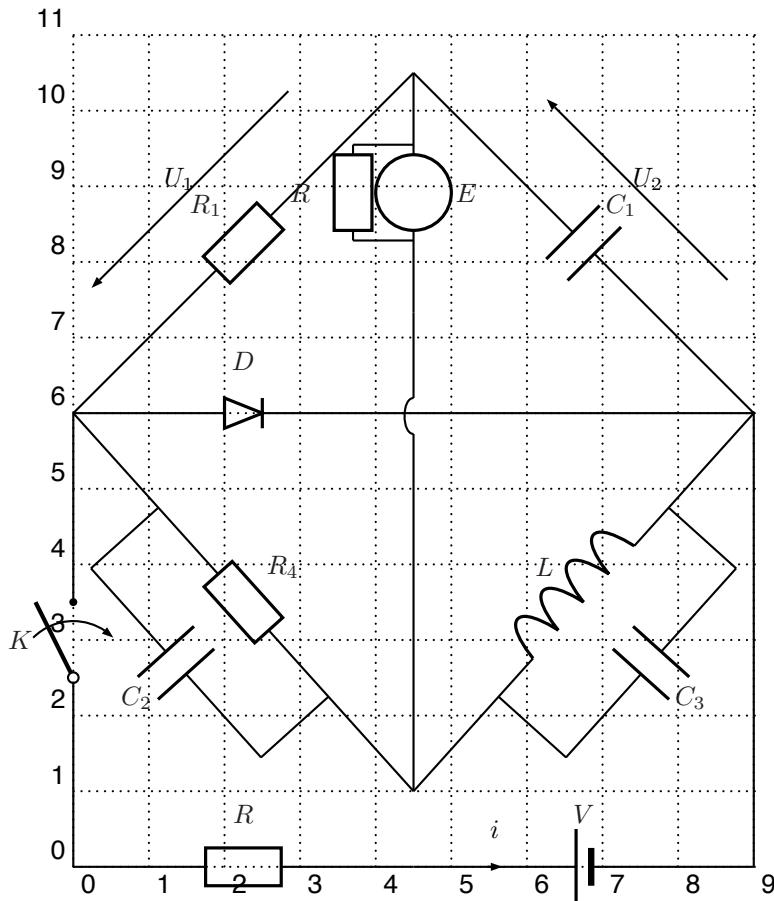
The fellowing example was written by Manuel Luque.

```
\begin{pspicture}(14,4)
\psgrid[subgriddiv=1,griddots=10]
\pnode(0,0){B}\pnode(0,3){A}
\pnode(2.5,3.5){C}\pnode(2.5,-0.5){D}
\pnode(5,3){E}\pnode(6.5,1.5){F}
\pnode(5,0){G}\pnode(3.5,1.5){H}
\pnode(8,2.5){I}\pnode(8,1){J}
\pnode(10,2.5){K}\pnode(10,1){L}
\pnode(14,2.5){M}\pnode(12,1){N}
\pnode(3,1){H'}\pnode(14,2.5){O}
\pnode(14,1){P}\pnode(13.5,1){Q}
\transformer[transformeriprimarylabel=$i_1$,
  transformerisecondarylabel=$i_2$,
  primarylabel=$n_1$,secondarylabel=$n_2$]%
  (A)(B)(C)(D){$T_1$}
{\psset{fillstyle=solid,fillcolor=black}
\diode(H)(E){}\diode(H)(G){}
\diode(E)(F){}\diode(G)(F){}}
\capacitor[dipolestyle=chemical](I)(J){}
\capacitor(K)(L){}
\REG(K)(M)(N)%
  {\shortstack{\textsf{%
  \textbf{\large LM7805}}\\\textbf{+5V}}}
\ncangle{I}{F}\psline(I)(K)
\ncangle{E}{C}\ncangle{G}{D}
\ncangle[arm=0]{P}{Q}
\ncangle[arm=0]{H}{H'}
\ground(H')\ground(J)
\ground(L)\ground(N)
\ground(Q)\qdisk(I){1.5pt}
```

```
\qdisk(K){1.5pt}\qdisk(E){1.5pt}
\qdisk(G){1.5pt}\qdisk(H){1.5pt}
\qdisk(F){1.5pt}
\pscircle[fillstyle=solid](A){0.075}
\pscircle[fillstyle=solid](B){0.075}
\pscircle[fillstyle=solid](P){0.075}
\pscircle[fillstyle=solid](O){0.075}
\end{pspicture}
```
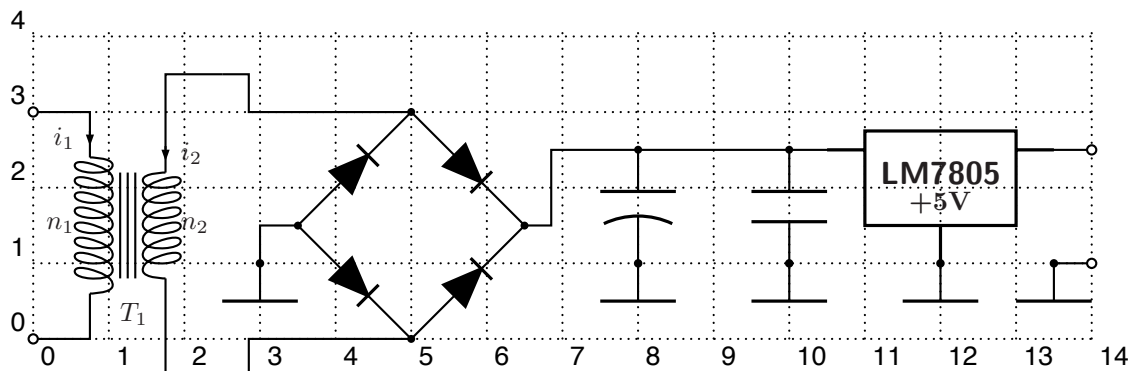

The fellowing example was written by Lionel Cordesses.

```
\begin{pspicture}(11,3)
\psset{dipolestyle=elektor}
\pnode(1,2){Vin}\pnode(0.5,2){S}\pnode(0.5,0){Sm}
\pnode(2.5,2){A}\pnode(4.5,2){B}\pnode(6.5,2){C}
\pnode(8,2){Cd}\pnode(8.5,2){D}\pnode(9.5,2){E}
\pnode(2.5,0){Am}\pnode(4.5,0){Bm}\pnode(6.5,0){Cm}
\pnode(8.5,0){Dm}\pnode(9.5,0){Em}
\Ucc[labeloffset=0.9](Sm)(S){$V_{in}$}\resistor(Vin)(A){$R$}
\capacitor(A)(Am){$C_1$} \capacitor(B)(Bm){$C_3$}
\capacitor[labeloffset=-0.7](D)(Dm){$C_n$}\resistor(E)(Em){$R$}
\coil(A)(B){$L_2$}\coil(B)(C){$L_4$}
\wire(Am)(Bm)\wire(Bm)(Cm)\wire(Cm)(Dm)\wire(Dm)(Em)\wire(D)(E)
\wire(Cd)(D)\psline[linestyle=dashed](C)(Cd)
\wire(S)(Vin)\wire(Sm)(Am)
\pscircle*(D){2\pslinewidth} \pscircle*(Dm){2\pslinewidth}
\pscircle*(A){2\pslinewidth} \pscircle*(Am){2\pslinewidth}
\pscircle*(B){2\pslinewidth} \pscircle*(Bm){2\pslinewidth}
\end{pspicture}
```
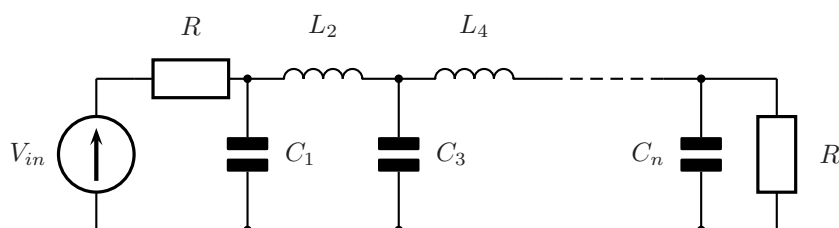

6   Adding new components

Adding new components is not so simple. As a matter of fact, due to the complex mechanism of \multidipole, there are multiple steps. The easiest way to proceed is to draw the component, send it to me (christophe.jorssen@noos.fr) and I'll do the programming work regarding your component. Nevertheless, it can take a few time...

If you want to modify the code, you need to know the fellowing things. For a dipole, you need to define

```
\def\component_name{\@ifnextchar[{\pst@component_name}{\pst@component_name[]}}
%
\def\pst@component_name[#1](#2)(#3)#4{{%
  \pst@draw@dipole{#1}{#2}{#3}{#4}\pst@draw@component_name
```

```
  }\ignorespaces}
%
\def\pst@multidipole@component_name{\@ifnextchar[{\pst@multidipole@component_name@}%
  {\pst@multidipole@component_name@[]}}
%
\def\pst@multidipole@component_name@[#1]#2{%
  \expandafter\def\csname pst@circ@tmp@\number\pst@circ@count@iii\endcsname{#2}%
  {\setkeys{psset}{#1}%
  \ifPst@circ@parallel\aftergroup\advance\aftergroup\pst@circ@count@i\aftergroup\m@ne\fi}%
  \pst@circ@count@ii=\pst@circ@count@i%
  \advance\pst@circ@count@ii\@ne%
  \toks0\expandafter{\pst@multidipole@output}%
  \edef\pst@multidipole@output{%
    \the\toks0%
    \pst@multidipole@def@coor%
    \noexpand\component_name[#1]%
  (! X@\the\pst@circ@count@i\space Y@\the\pst@circ@count@i)%
  (! X@\the\pst@circ@count@ii\space Y@\the\pst@circ@count@ii)%
      {\noexpand\csname pst@circ@tmp@\number\pst@circ@count@iii\endcsname}%
  }%
  \pst@multidipole@
}
%
\def\pst@draw@component_name{%
  % The PSTricks code for your component
  % The center of the component is at (0,0)
  \pnode(component_left_end,0){dipole@1}
  \pnode(component_right_end,0){dipole@2}
}
```

Then, you have to make some changes in \multidipole core code... In the definition of \pst@multidipole, look for the last \ifx test

```
% ...
% Extract from \pst@multidipole
                  \else
                    \ifx\circledipole #4%
                      \let\next\pst@multidipole@circledipole
                    \else
                      \ifx\LED #4%
                        \let\next\pst@multidipole@LED
                      \else
                      % Put your modification here
                        \let\next\ignorespaces
                      \fi
                    \fi
                  \fi
% Extract form \pst@multidipole
% ...
```

and add (in red)

```
% ...
% Extract from \pst@multidipole
                  \else
                    \ifx\circledipole #4%
                      \let\next\pst@multidipole@circledipole
                    \else
                      \ifx\LED #4%
                        \let\next\pst@multidipole@LED
                      \else
                        \ifx\component_name #4%
                          \let\next\pst@multidipole@component_name
```

```
                            \else
                                \let\next\ignorespaces
                            \fi
                        \fi
                    \fi
                \fi
% Extract form \pst@multidipole
% ...
```

Do the same in `\pst@multidipole@`

```
% ...
% Extract from \pst@multidipole@
                    \else
                        \ifx\circledipole #1%
                            \let\next\pst@multidipole@circledipole
                        \else
                            \ifx\LED #1%
                                \let\next\pst@multidipole@LED
                            \else
                            \ifx\component_name #1%
                                \let\next\pst@multidipole@component_name
                            \else
                                \let\next\ignorespaces
                                \pst@multidipole@output
                            \fi
                            \fi
                        \fi
                    \fi
% Extract form \pst@multidipole@
% ...
```

and that's it! All you have to do then is send your modified `pst-circ.tex` to me: it'll be part of the official release of **'pst-circ'**.

   Important: Pay attention to the comment char `%` at the end of lines. They are *very* important in order to avoid spurious blanks.

7   Acknowledgements

I thank of course Manuel Luque for his original work on pst-circ and for his circuit drawings: this wouldn't have been possible without him. As usual, Denis Girou gave me a precious hand with some dark tricks of TeX and PSTricks. Jean-Côme Charpentier wrote the outline of `\multidipole` (a story about riri, fifi and loulou...). Herbert Voss drew some additional tripoles (`\Tswitch`), introduced new color features and solved a bug with `\multidipole`. Finally, Lionel Cordosses drew the elektor style dipoles.