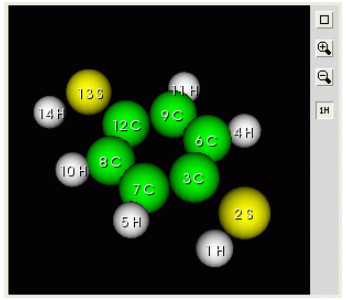
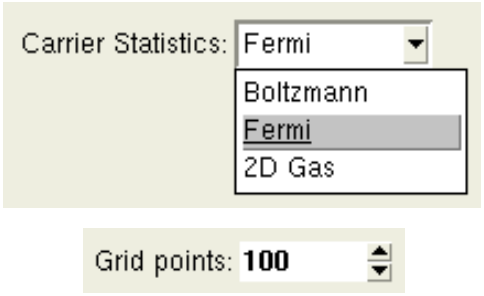
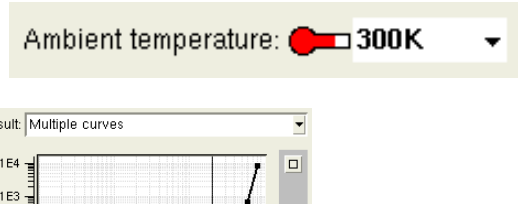
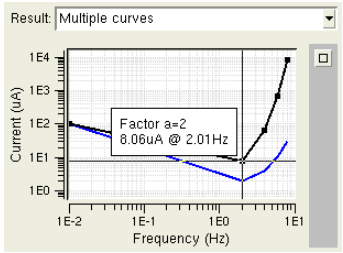
More Rappture Objects









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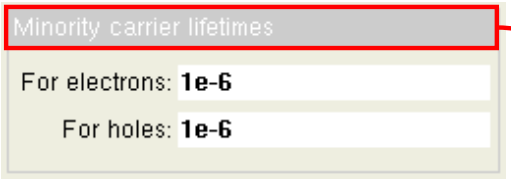
<group>

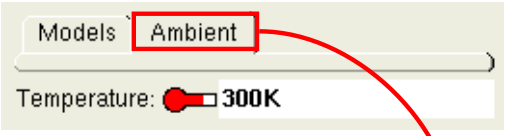
Group related elements




```
<group id="tau">
  <about>
    <label>Minority carrier lifetimes</label>
  </about>

  <number id="taun">
    <about> <label>For electrons</label> </about>
    <default>1e-6</default>
  </number>

  <number id="taup">
    <about> <label>For holes</label> </about>
    <default>1e-6</default>
  </number>
</group>
```

<group>

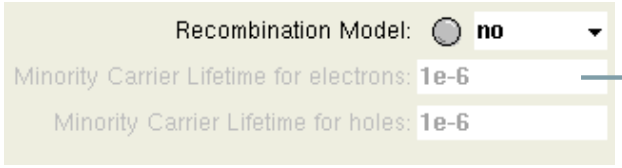
Group of groups ➔ tabs




```
<group id="tabs">

  <group id="models">
    <about> <label>Models</label> </about>
    …input elements for this tab…
  </group>

  <group id="ambient">
    <about> <label>Ambient</label> </about>
    <number id="temp“>
      <about> <label>Temperature</label> </about>
      <units>K</units>
      <default>300K</default>
    </number>
  </group>

</group>
```

Enable/disable to remove clutter

Disable inputs when they're not needed

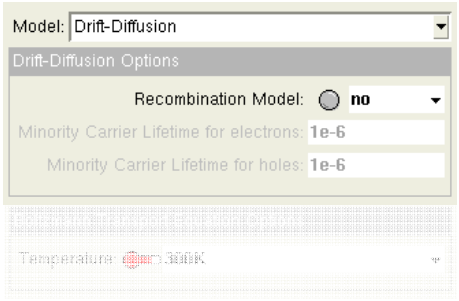


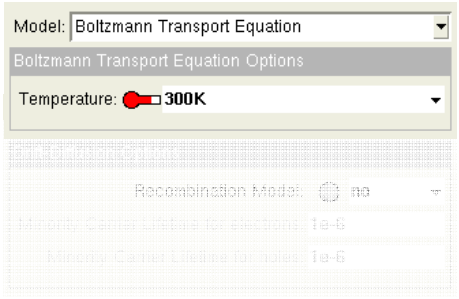
Enabled only when Recombination Model is "yes"

```
<input>
  <boolean id="recomb">
    <about>
      <label>Recombination Model</label>
    </about>
    <default>off</default>
  </boolean>

  <number id="taun">
    <about>
      <label>Minority Carrier Lifetime for electrons</label>
      <enable>input.boolean(recomb)</enable>
    </about>
    <default>1e-6</default>
  </number>
  …
```

Enable/disable to remove clutter

Disable a group to hide all of the controls within it





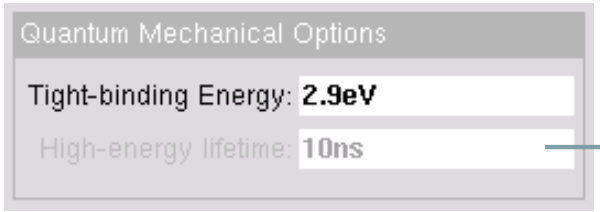
Show this panel when
Model is set to “dd” (Drift-Diffusion)

```
<group id="dd">
  <about>
    <label>Drift-Diffusion Options</label>
    <enable>input.choice(model) == "dd“</enable>
  </about>
  …
</group>
```

Show this panel when
Model is set to “bte” (Boltzmann Transport Eqn)

```
<group id="bte">
  <about>
    <label>Boltzmann Transport Equation Options</label>
    <enable>input.choice(model) == "bte“</enable>
  </about>
  …
</group>
```

Enable/disable based on numbers



Enabled only when
Tight-binding energy >= 3eV

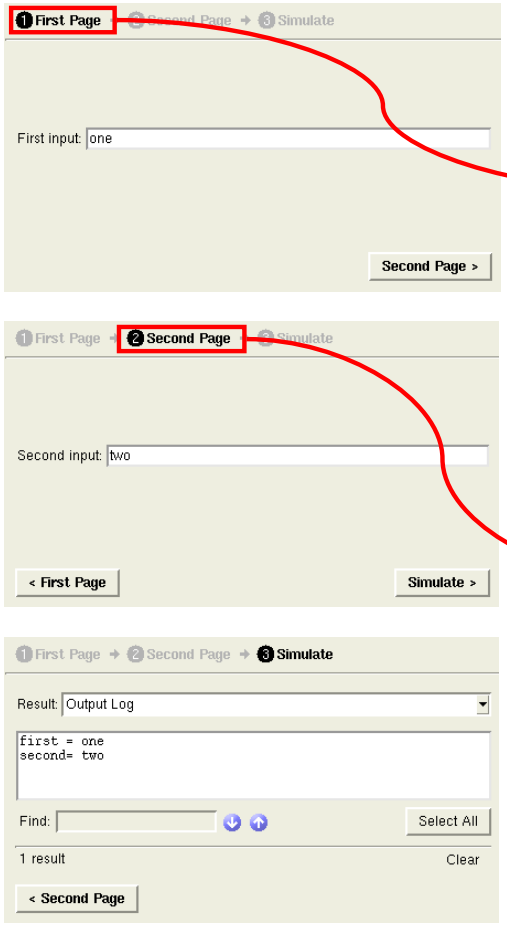
```
<input>
 <group id="negf">
    <about><label>Quantum Mechanical Options</label></about>
    <number id="tbe">
      <about> <label>Tight-binding Energy</label> </about>
      <units>eV</units>
      <default>3.12eV</default>
    </number>
    <number id="tau">
      <about>
        <label>High-energy lifetime</label>
        <enable>input.group(negf).number(tbe):eV &gt;= 3</enable>
      </about>
      <units>ns</units>
      <default>10ns</default>
    </number>
    …
```

XML way of saying >=

Convert value to eV

<phase>

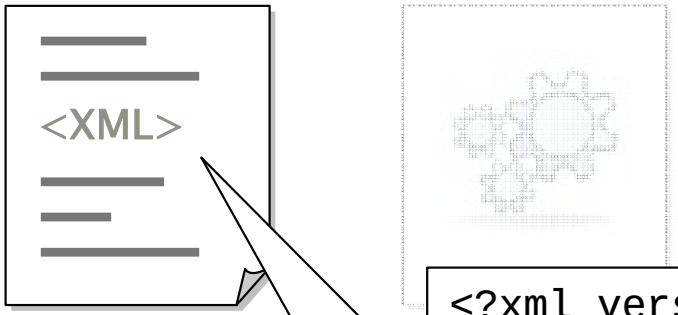
Multiple pages of inputs, needed only for complex tools




```
<input>

  <phase id="one">
    <about> <label>First Page</label> </about>
    <string id="first">
      <about> <label>First input</label> </about>
      <default>one</default>
    </string>
  </phase>

  <phase id="two">
    <about> <label>Second Page</label> </about>
    <string id="second">
      <about> <label>Second input</label> </about>
      <default>two</default>
    </string>
  </phase>

</input>
```

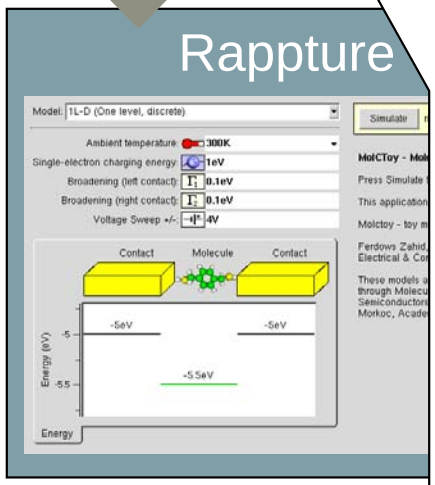
Focus on <output> side of tool.xml

description of tool, including inputs and outputs



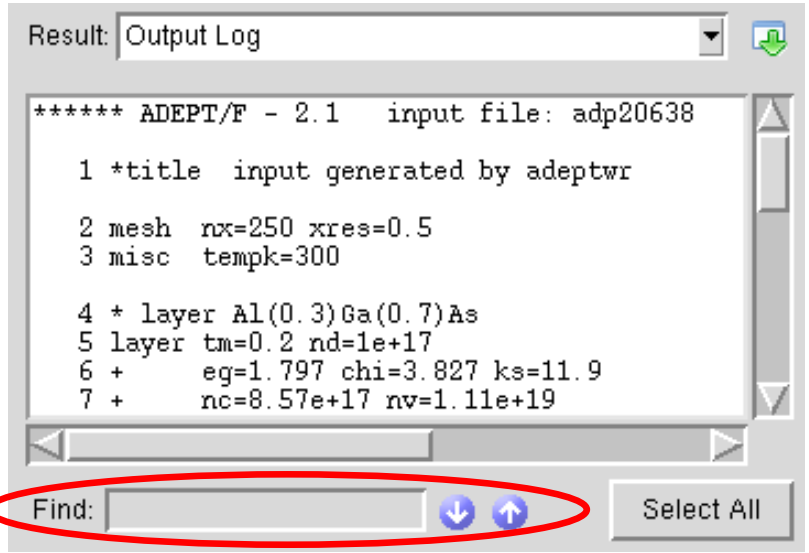

```
<?xml version="1.0"?>
<run>
  <tool>
    <about>This is my tool.</about>
    …
  </tool>
  <input>
    [redacted]
  </input>
  <output>
    [redacted]
  </output>
</run>
```

Produces the user interface *automatically!*



<log>

Standard output from simulator



Controls for search through text

Treated as unimportant (low level) output, and therefore listed last

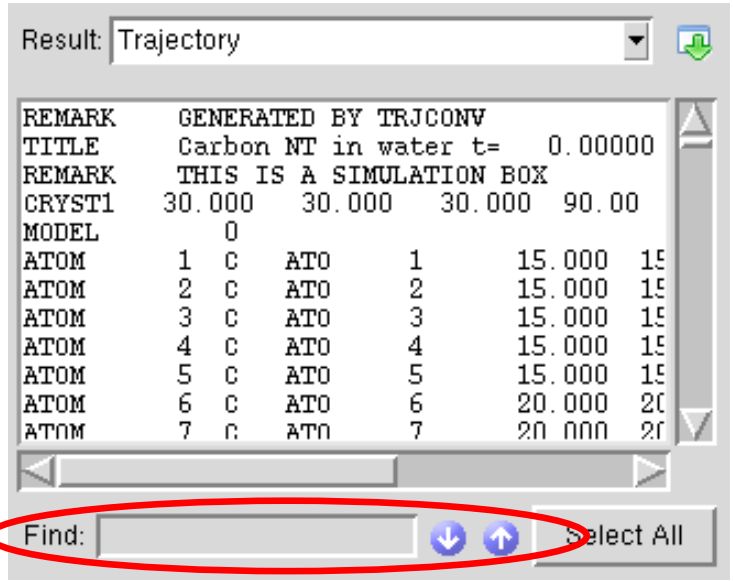
```
<output>
  <log>****** ADEPT/F - 2.1   input
file: adp20638      Sat Jul 30 19:39:36
2005 ******

   1 *title  input generated by adeptwr

   2 mesh  nx=250 xres=0.5
   3 misc  tempk=300
   …
  </log>
</output>
```

or, in Python…

```
import Rappture
import sys
driver = Rappture.library(sys.argv[1])
…
driver.put('output.log', stdout)
```

<string>

Other output files from simulator—including binary files



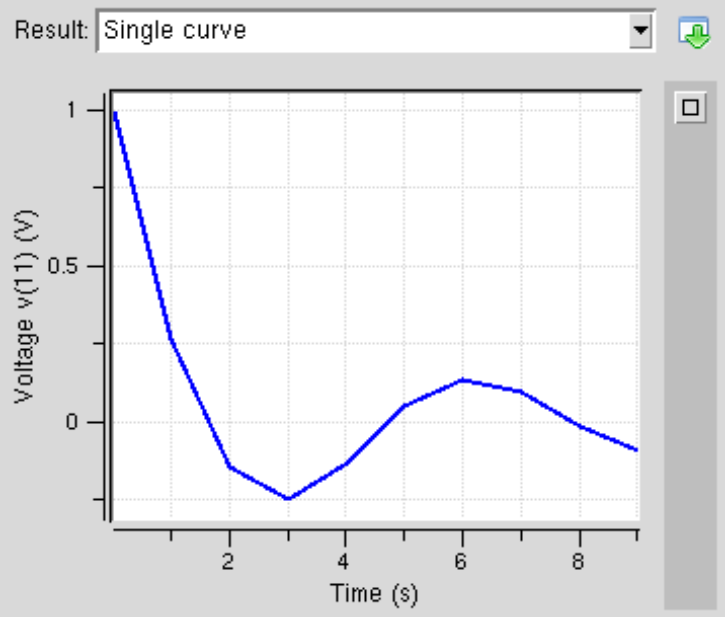
Controls for search through text

```
import Rappture
import sys
driver = Rappture.library(sys.argv[1])
…
path = 'output.string(traj)'
dr
dr
dr
```

```
<output>
  <string id="traj">
    <about>
      <label>Trajectory Data</label>
      <description>Data in pdb
format</description>
    </about>
    <current>REMARK   GENERATED BY
TRJCONV
TITLE     Carbon NT in water t=   0.00000
…
    </current>
  </string>
</output>
```

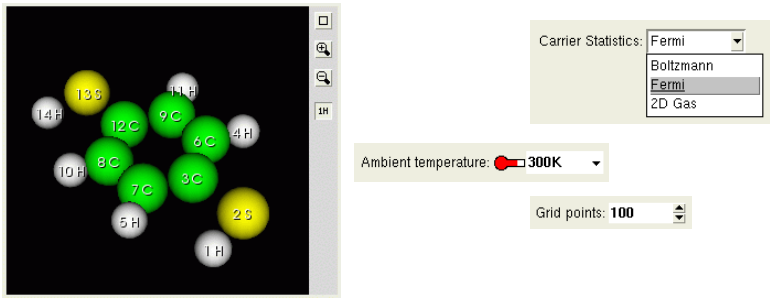
<curve>

X-Y plots




```
import Rappture
import sys
driver = Rappture.library(sys.argv[1])
…
path = 'output.curve(single)'

driver.put(path+'.about.label',
  'Single curve')

driver.put(path+'.xaxis.label', 'Time')
driver.put(path+'.xaxis.units', 's')
driver.put(path+'.yaxis.label', 'Voltage')
driver.put(path+'.yaxis.units', 'V')

data = """
0 0
1 2
3 4 """
driver.put(path+'.component.xy', data)
```

Tour the zoo

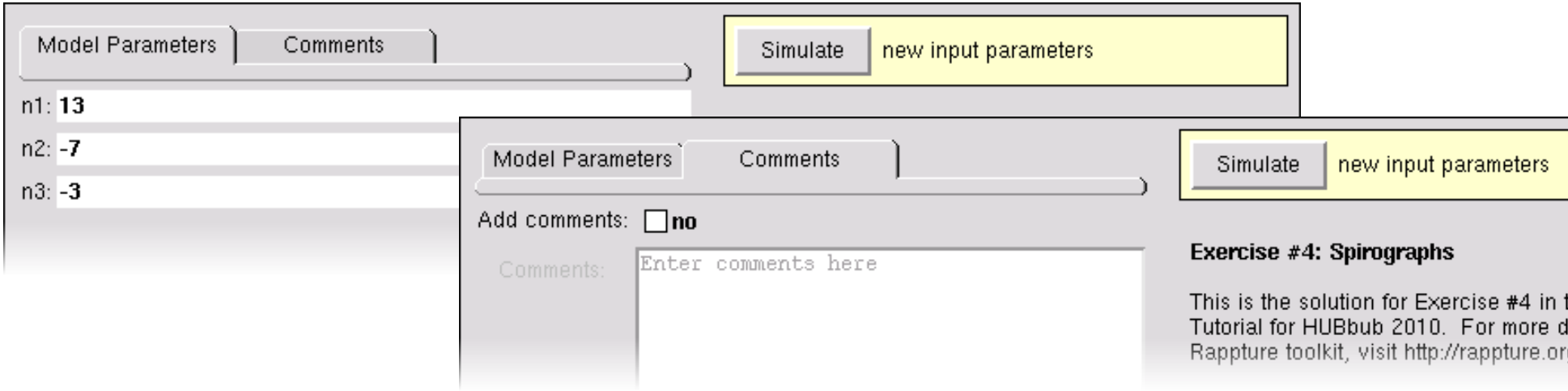


Zoo of Examples

- Complete catalog of data objects online
- See screen shots
- Copy xml code

Exercise #4: More controls for Spirograph

1) Create two groups of controls:



2) When comments are enabled, create a <string> output with comments