

Using the Loader

Michael McLennan

HUBzero® Platform for Scientific Collaboration
Purdue University

loader

Example:

new input parameters

loader

Example of a Rapture <loader> object.

A loader is used to load values into the interface from example files. The example files have the same format as the tool.xml file that they are being loaded into. In fact, they can be generated by running the tool and saving the output run.xml file. In you look in the example files, you'll see that each one also has an <about> section with a label and a description. These show up in the loader control.

The description appears in a tooltip when you hover over the loader control with your mouse.

You can see the real action here by selecting various examples from the loader. The simulate button doesn't do very much. It just copies the inputs to the output log.

Input #1:

Input #2:

Mass: **10g**

Change both

Input #1:

Input #2:

Mass: **10g**

Change first

Input #1:

Input #2:

Mass: **10g**

Change second

Input #1:

Input #2:

Mass: **10g**

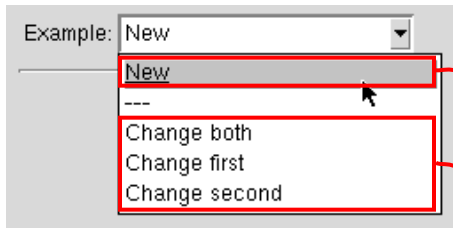
New

Input #1:

Input #2:

Mass: **10g**

Put the loader definition in your input section, usually near the top:



```

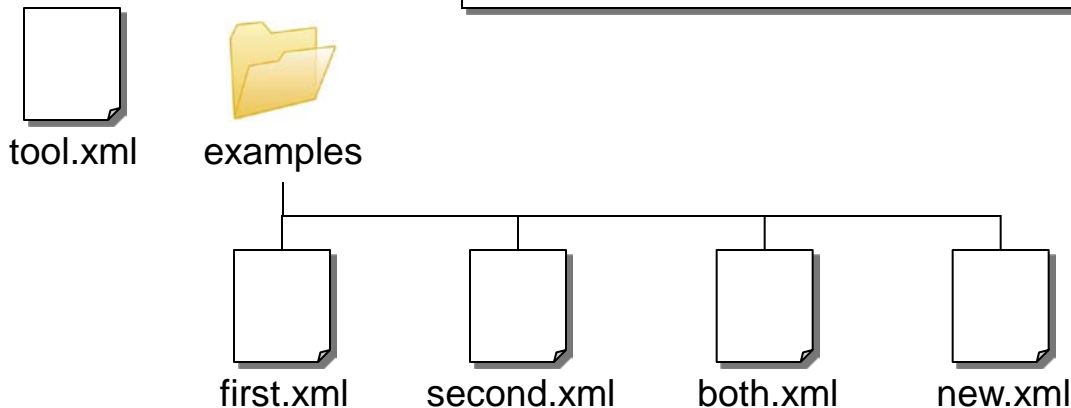
<l oader>
  <about>
    <l abel >Exampl e</l abel >
    <descri pti on>Thi s loads exampl es. </descri pti on>
  </about>

  <new>new. xml </new>

  <exampl e>*. xml </exampl e>

  <defaul t>new. xml </defaul t> ——— Load by default
</l oader>
  
```

These files sit in
 @tool /exampl es
 @tool is where tool. xml sits



How do you make an example file?

```
cp tool.xml examples/both.xml
```

```
vi examples/both.xml
```

Add a description
for the example

```
<?xml version="1.0"?>
<run>
  <about>
    <label>Change both</label>
    <description>This example changes both inputs,
    #1 to "first" and #2 to "second"</description>
  </about>
```

Set a <current>
value for each
element you want
to set

```
...
<input>
  <string id="one">
    <current>first</current>
  </string>
  <string id="two">
    <current>second</current>
  </string>
</input>
</run>
```

loader

Device: 3-barrier device

Ambient temperature: 300K
 Applied bias: 0V

Thickness B1: 5nm
 Thickness W1: 5nm
 Thickness B2: 5nm
 Thickness W2: 5nm
 Thickness B3: 5nm

Doping (/cm³)

Doping Mole Fraction x

loads a <structure> element

Resonant Tunneling Diodes

leaves these alone

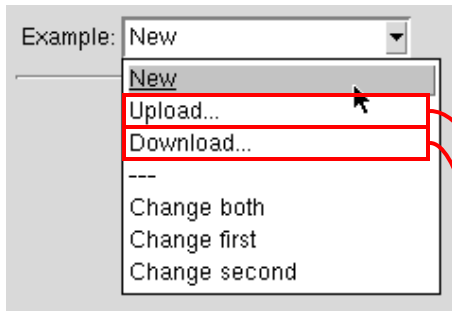
High levels of resonant tunneling gives rise to negative differential resistance. Study the effects of various material layers and their properties on I/V characteristics.

Choose a structure from the list on the left. The structures are composed of a stack of material layers with either pure GaAs or AlGaAs with a mole fraction x (representing the amount of Al in the alloy). With $x=0$, the material is pure GaAs. With higher values of x , the added Al increases the band gap and the effective mass, creating barriers to electronic conduction. Adjust doping densities and material properties if you like, then push the Simulate button. Simulation results will appear here.

This application is powered by:
 SEQUAL: Semiconductor Electrostatics by QUantum AnaLysis (v2.1)
 written by Michael McLennan, School of Electrical Engineering, Purdue University, 1989.

<https://nanohub.org/tools/rtd>

Add targets for upload/download forms



Prompts the user to upload directly into various controls

Most useful for `<string>` inputs

Allows the user to download input values, edit, and upload again

```

<l oader>
  <about>
    <l abel >Exampl e</l abel >
    <descrip tion>This loads exampl es. </descrip tion>
  </about>
  <upl oad>
    <to>i nput. stri ng(i ndeck) </to>
    <to>i nput. stri ng(datafi le) </to>
  </upl oad>
  <downl oad>
    <from>i nput. stri ng(i ndeck) </from>
    <from>i nput. stri ng(datafi le) </from>
  </downl oad>

  <new>new. xml </new>
  <exampl e>*. xml </exampl e>

  <defaul t>new. xml </defaul t>
</l oader>
  
```

Add a <loader> to the Rappure interface for your MATLAB script:

Examples: Flower

Fancy cross
Flower
Palm branch

Fun with

The spirograph equations for three or more wheels can be generalized as follows:

$$z(t) = \sum_{k=1}^n a_k e^{i2\pi(n_k t + \theta_k)}, \quad t \in [0, 1],$$

This program solves those equations for three wheels, assuming all of the a and θ coefficients are 0. Find more details online at <http://linuxgazette.net/133/uana.html>.

Model parameters | Comments

n1: 19
n2: -13
n3: 3

Result: Spirograph

1 result Parameters... Clear

Include these examples

Fancy cross

$$n_1 = 13$$

$$n_2 = -7$$

$$n_3 = -3$$

Flower

$$n_1 = 19$$

$$n_2 = -13$$

$$n_3 = 3$$

Palm Branch

$$n_1 = 7$$

$$n_2 = -5$$

$$n_3 = 2$$