fastGlitch:
Filtered time series displaying

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What is fastGlitch

- Plots filtered time series of several channels
  - Arbitrary filtering possible (uses M. Ito’s FilterDesign class)
  - Uses ROOT graphics.

- Batch mode
  - Writes eps files
  - Comes with a shell script to query database for triggers and generate summary web page

- Interactive mode
  - Rudimentary, but ROOT graphics brings lots of defaults

- Has some limited has audio capabilities (Linux)
Example S2, H1

- Query DB for triggers
- Get frames locations
- Start fastGlitch

→ Typical H1 glitch
Example
S2, H2

- Same thing for the 2km

→ typical H2 glitch
**S2 Summary web page**

- Created by script
- Per IFO:
  - Summary page (1 line per day)
  - Glitch list per day
  - Time series plots

### GPS-start - GPS-stop duration(sec) start stop xml-file

<table>
<thead>
<tr>
<th>Duration</th>
<th>Start Time</th>
<th>Stop Time</th>
<th>XML File</th>
</tr>
</thead>
<tbody>
<tr>
<td>86400 s</td>
<td>Feb 13 2003 00:00:00 UTC</td>
<td>Feb 14 2003 00:00:00 UTC</td>
<td>H1-zG-729129613.86400.xml</td>
</tr>
<tr>
<td>86400 s</td>
<td>Feb 14 2003 00:00:00 UTC</td>
<td>Feb 15 2003 00:00:00 UTC</td>
<td>H1-zG-729216013.86400.xml</td>
</tr>
<tr>
<td>86400 s</td>
<td>Feb 15 2003 00:00:00 UTC</td>
<td>Feb 16 2003 00:00:00 UTC</td>
<td>H1-zG-729302413.86400.xml</td>
</tr>
<tr>
<td>86400 s</td>
<td>Feb 16 2003 00:00:00 UTC</td>
<td>Feb 17 2003 00:00:00 UTC</td>
<td>H1-zG-729388813.86400.xml</td>
</tr>
</tbody>
</table>

### Glitch list per day

<table>
<thead>
<tr>
<th>Name</th>
<th>Start Time</th>
<th>Start Time ns</th>
<th>Size</th>
<th>Significance</th>
<th>Subtype</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glitch 729503750</td>
<td>835937500</td>
<td>46.228699</td>
<td>11.792</td>
<td>H1:LSC-AS_Q</td>
<td></td>
</tr>
<tr>
<td>Glitch 729524363</td>
<td>394042969</td>
<td>16.146601</td>
<td>13.796</td>
<td>H1:LSC-AS_Q</td>
<td></td>
</tr>
<tr>
<td>Glitch 729524340</td>
<td>794921875</td>
<td>13.3425</td>
<td>14.9055</td>
<td>H1:LSC-AS_Q</td>
<td></td>
</tr>
<tr>
<td>Glitch 729523372</td>
<td>801574707</td>
<td>10.3117</td>
<td>11.0289</td>
<td>H1:LSC-AS_Q</td>
<td></td>
</tr>
<tr>
<td>Glitch 729512547</td>
<td>950073242</td>
<td>65.696602</td>
<td>18.662</td>
<td>H1:LSC-AS_Q</td>
<td></td>
</tr>
<tr>
<td>Glitch 729503671</td>
<td>828308105</td>
<td>6.1570201</td>
<td>7.2414498</td>
<td>H1:LSC-AS_Q</td>
<td></td>
</tr>
</tbody>
</table>
How to use fastGlitch

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- **Batch mode** (Requires –save option)
  - Produces one plot per trigger (specified in xml file)

- **Interactive mode (= -nobatch)**
  - Allows interactive use of ROOT graphics (i.e. zoom, etc.)
  - No full a GUI

- **-boxes | -lines | -noboxes**
  - To mark triggers draw boxes, only horizontal lines or nothing

- **-infile "*.gwf"**
  - Specify frame files; DMTINPUT is used if not specified
The configuration file

Default values for command line options

- **fastGlitch** Command line options (use one line per option)
- **DatEnv** options are not supported here, i.e. -infile, -debug, etc. have to be specified on the command line
- **available options**: -batch, -nobatch, -save, -nosave, -lines, -boxes
  - -batch
  - -save
  - -lines

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Trigger time information (time or xml file)

- **Time**, **Stride**, **OverlayTriggers**, **GraphicsPrefix**, **GraphicsFormat**, **Channels**
- **Time** = Jan 25 2003 17:12:00 UTC
- **Time** = now - 3600
- **Stride** = 10
- **TimeOffset** = 3
- **OverlayTriggers** = MyOverlay.xml
- **GraphicsPrefix** = out/fastGlitch-
- **GraphicsFormat** = eps,png,gif,jpg,pdf
- **Channels** = 5
  - L1:LSC-AS_Q  butter('HighPass',4,150.0)
  - L1:LSC-AS_I  butter('HighPass',4,30.0)
  - L1:LSC-AS_DC nofilter
  - L1:ASC-QPDX_DC nofilter

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Output graphics setting

Number of channels, channel names and filter strings
Where it is:
Web link

- [http://ligo.mit.edu/~sballmer/fastGlitch](http://ligo.mit.edu/~sballmer/fastGlitch)
  - Documentation and download
  - Link to S2 summary page (only H1 & H2)

- Part of the gds tree