



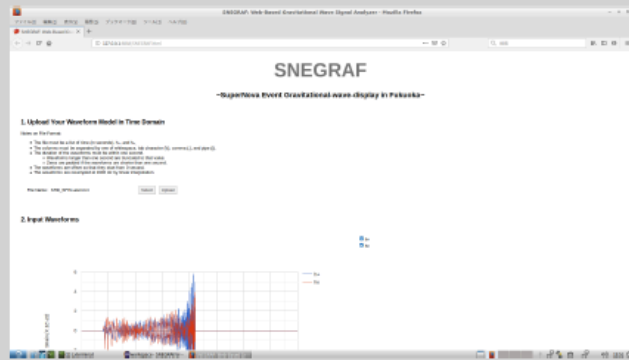
# SNEGRAF: Coherent Network Analysis on Your Web Browser!

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## Abstract



A precise reconstruction of gravitational-wave signals is the key to reveal physical processes during a core-collapse supernova explosion. Coherent network analysis fulfills an optimal detection of the event by coordinating individual observations by different worldwide gravitational-wave detectors. We have been developing the RIDGE pipeline for this purpose. We have also been working on a web interface named "SuperNova Event Gravitational-wave-display in Fukuoka (SNEGRAF)" to allow its users to access RIDGE via web browsers easily. SNEGRAF convolutes user-uploaded waveforms with idealized Gaussian detector noises and responses, and makes a quick look of their reconstructed waveforms, sky-localization map, and detection statistics. The application is scheduled to be available in this winter. In this poster, we introduce our application.



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# 1. Coherent Network Analysis

- Coherent Network Analysis:
  - a method utilizing signals obtained with a global network of gravitational-wave detectors
  - tolerant of unmodelled detector noises
- RIDGE Pipeline:
  - an implementation of coherent network analysis
  - written in MATLAB



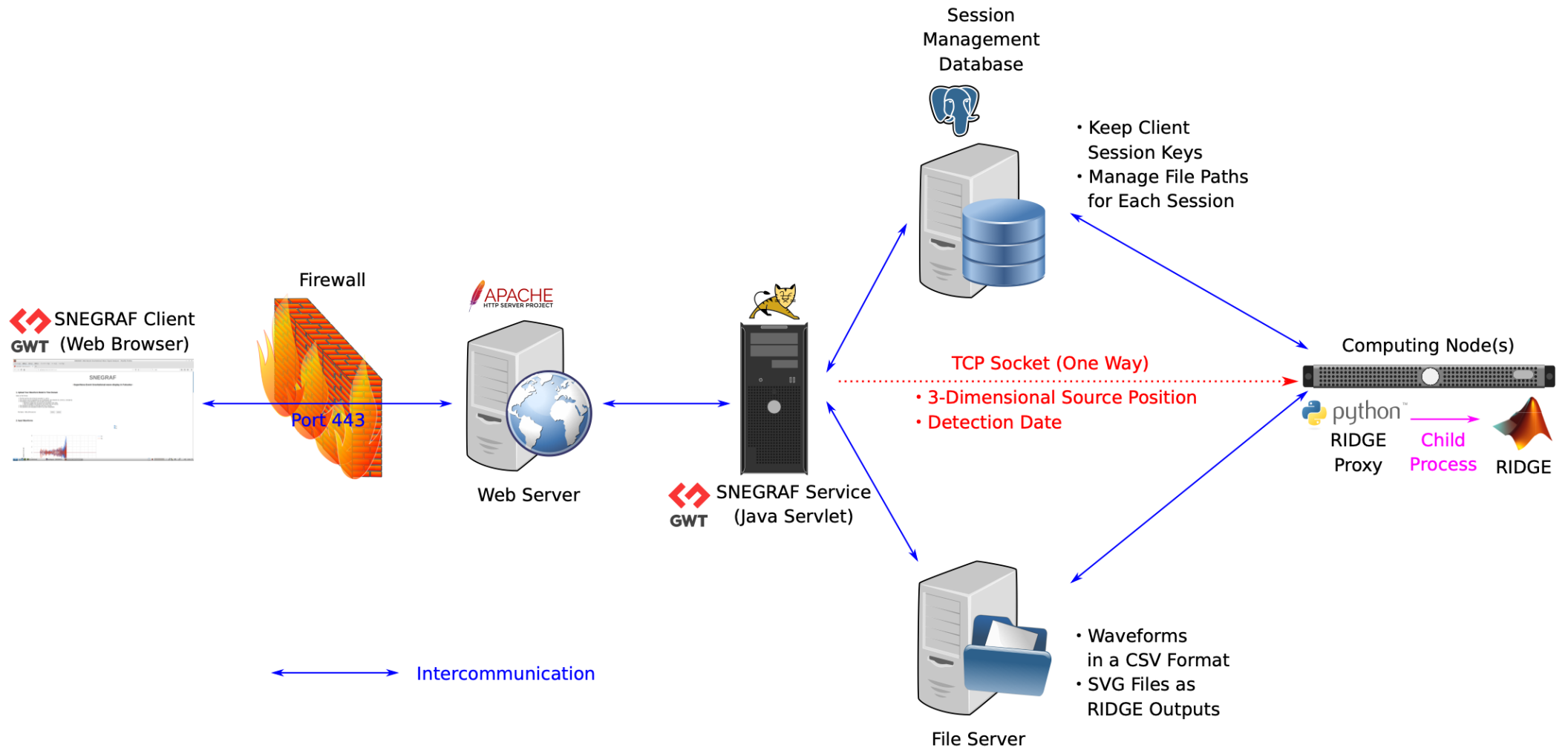


## 2. SNEGRAF

- SuperNova Event GRAvitational-wave-display in Fukuoka
- A web interface of RIDGE pipeline
- Built on Java Servlet + JavaScript
- Simulate waveforms detected with LIGO, Virgo, and KAGRA
- Present reconstructed waveforms and a source sky-localization map from the user's model waveforms



### 3. System Design



## 4. Demo

workspace - SNEGRAF/src/net/satoshiieguchi/snegraf/client/ui/SourceParameterPanel.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer

- almafits2sqlite3
- almafite2tsv
- ALMAWebQL
- aws-healpix-bench
- blade-runner
- coordinate-udf
- hive-bench1
- hive-bench2
- hive-bench3
- RemoteSystemsTempFiles
- SelectServiceByInstrument
- SNEGRAF

```
263 gpsDatePanel.setHorizontalAlignment(ALIGN_CENTER);
264 gpsDatePanel.setVerticalAlignment(ALIGN_MIDDLE);
265 gpsDatePanel.add(new Label("GPS Time"));
266 gpsDatePanel.add(gpsParamPanel);
267
268 gpsDecoratorPanel.add(gpsDatePanel);
269
270
271 final HorizontalPanel dateTimeParamPanel = new HorizontalPanel();
272 dateTimeParamPanel.setSpacing(5);
273 dateTimeParamPanel.setHorizontalAlignment(ALIGN_CENTER);
274 dateTimeParamPanel.setVerticalAlignment(ALIGN_MIDDLE);
275 dateTimeParamPanel.add(dateTimeDecoratorPanel);
276 dateTimeParamPanel.add(dateTimeDecoratorPanel);
277 dateTimeParamPanel.add(gpsDecoratorPanel);
278
279 final HorizontalPanel buttonPanel = new HorizontalPanel();
280 buttonPanel.setSpacing(5);
281 buttonPanel.setHorizontalAlignment(ALIGN_CENTER);
282 buttonPanel.setVerticalAlignment(ALIGN_MIDDLE);
283@
284@
285@
286@
287@
288@
289@
290@
291@
292@
293@
```

Outline

- secondBox\_ : TextBox
- getNowButton\_ : Button
- convertDateButton\_ : Button
- gpsWeekLabel\_ : Label
- gpsSecondLabel\_ : Label
- computeButton\_ : Button
- messageProcessing\_ : HTML
- ra\_ : double
- dec\_ : double
- distance\_ : double
- gps\_ : GPSTime
- handler\_ : List<EventHandler>
- SourceParameterPanel(TimeUtility, Widget, Widget)
- new ClickHandler() { ... }
- new ClickHandler() { ... }
- new ClickHandler() { ... }
- new ClickHandler() { ... }
- new ClickHandler() { ... }
- SourceParameterPanel(TimeUtility, Widget)
- SourceParameterPanel(TimeUtility)
- addEventHandler(EventHandler) : void
- removeEventHandler(EventHandler) : void
- clearEventHandler() : void
- onPositionExampleButton() : void
- onGetNowButton() : void
- onConvertDateButton() : void

Markers Properties Servers Data Source Explorer Snippets Console Development Mode Development Mode

SNEGRAF.html [GWT Development Mode (DevMode)] /usr/lib/jvm/java-8-openjdk-amd64/bin/java (2019/09/27 13:49:52)

```
skipped compile because no input files have changed
0.030s total -- Compile completed
GET /recompile/snegraf
Job net.satoshiieguchi.snegraf.SNEGRAF_1_3
starting job: net.satoshiieguchi.snegraf.SNEGRAF_1_3
binding: user.agent=geckoi_8
skipped compile because no input files have changed
0.030s total -- Compile completed
```

(2) Lxterminal (2) Lxterminal workspace - SNEGRAF/src... Google - Mozilla Firefox



## 5. Summary

- SNEGRAF is scheduled to be available by the end of this year
- If you have any questions, please visit the poster booth!

