Ideas and comments about GW and SIMBAD/Vizier

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Outline: comments on SIMBAD entries for GWXXXXX and technical discussion about BBH catalog project

GW in SIMBAD

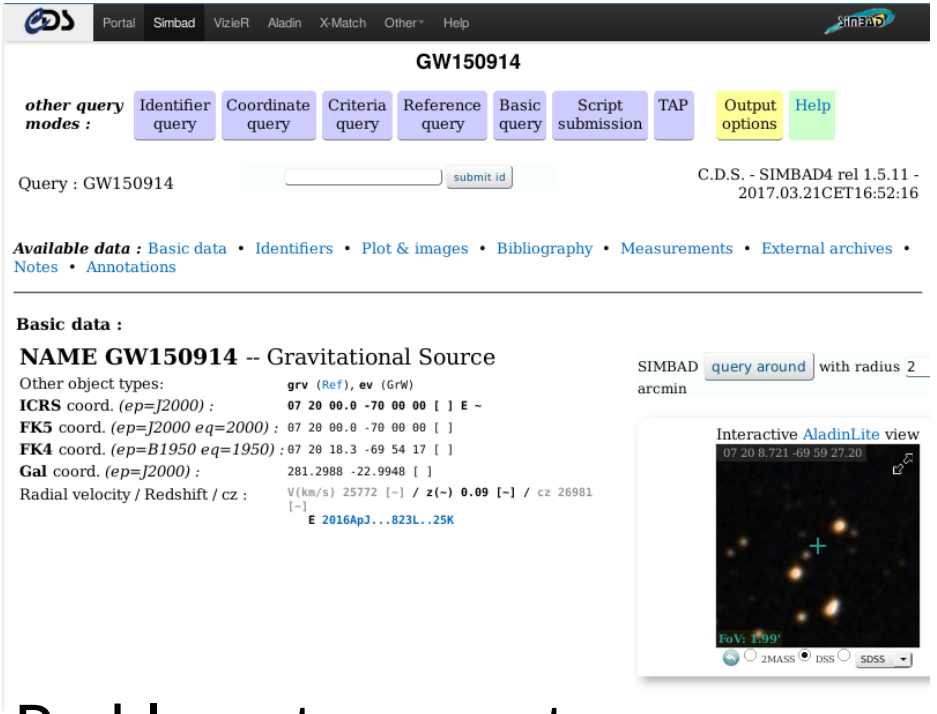
Source : email from ecm, Oct 21 2016

- **Current status [today: Mar 21, 2017]**

  `http://simbad.u-strasbg.fr/simbad/sim-id?Ident=GW150914`
  `http://simbad.u-strasbg.fr/simbad/sim-id?Ident=GW151226`
  `http://simbad.u-strasbg.fr/simbad/sim-id?Ident=LVT151012`

- **Issues with the present entries**
  - Bad naming, wrong references, confusing sky location (see next slides)
  - Non consensual object type (grv, GrW)
  - Event time is missing
  - Add basic properties of observed signal: GW luminosity, duration in band
  - Source properties: redshift [should be with error bars!]
  - Add links to losc.ligo.org?

GW150914



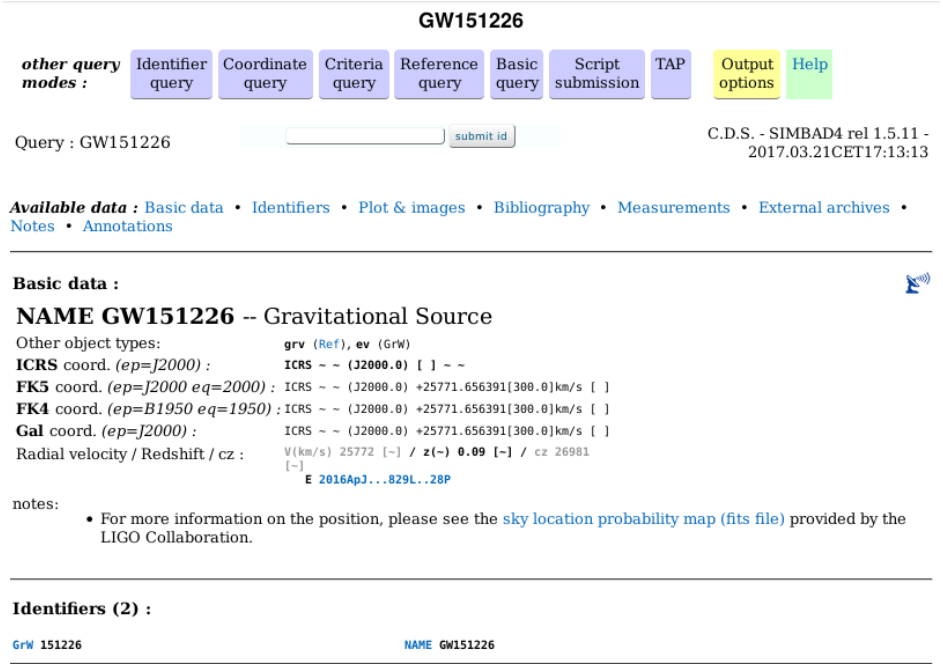
Problems to correct

- "NAME GW150914 -- Gravitational Source" > "Gravitational Wave Source or event"
- Reference is wrong!

  `http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.116.061102`
- Sky position RA, dec is misleading!
  - Should be pointing to a skymap

    `https://losc.ligo.org/s/events/GW150914/P1500227/LALInference_skymap.fits.gz`

GW151226



GW151226

other query modes : Identifier query | Coordinate query | Criteria query | Reference query | Basic query | Script submission | TAP | Output options | Help

Query : GW151226 submit id

C.D.S. - SIMBAD4 rel 1.5.11 - 2017.03.21CET17:13:13

Available data : Basic data • Identifiers • Plot & images • Bibliography • Measurements • External archives • Notes • Annotations

Basic data :

NAME GW151226 -- Gravitational Source

Other object types: grv (Ref), ev (GrW)

ICRS coord. (ep=J2000) : ICRS ~ ~ (J2000.0) [ ] ~ ~

FK5 coord. (ep=J2000 eq=2000) : ICRS ~ ~ (J2000.0) +25771.656391[300.0]km/s [ ]

FK4 coord. (ep=B1950 eq=1950) : ICRS ~ ~ (J2000.0) +25771.656391[300.0]km/s [ ]

Gal coord. (ep=J2000) : ICRS ~ ~ (J2000.0) +25771.656391[300.0]km/s [ ]

Radial velocity / Redshift / cz : V(km/s) 25772 [~] / z(~) 0.09 [~] / cz 26981 [~]

E 2016ApJ...829L..28P

notes:

• For more information on the position, please see the sky location probability map (fits file) provided by the LIGO Collaboration.

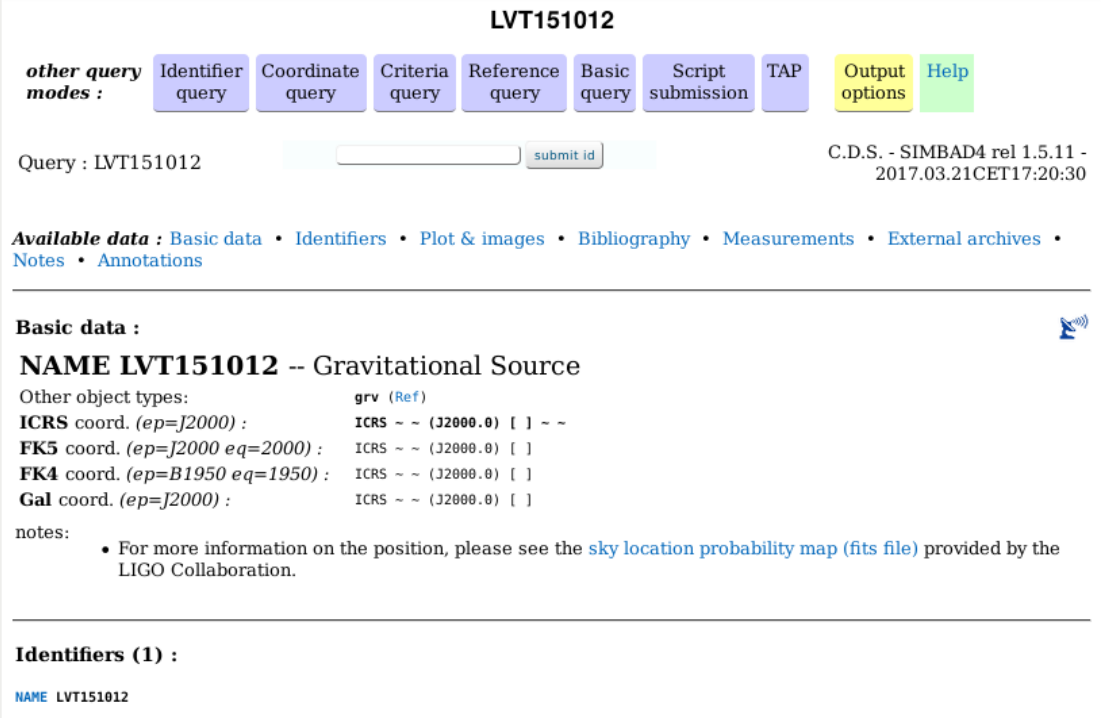
Identifiers (2) :

GrW 151226 NAME GW151226

Problems to correct

- "NAME GW151226 -- Gravitational Source" > "Gravitational Wave Source or event"
- Reference is wrong!
  `http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.116.241103`
- Sky position RA, dec is misleading!
  - Should be pointing to a skymap
    `https://losc.ligo.org/s/events/GW151226/P1500227/LALInference_skymap_2.fits.gz`

LVT151012



LVT151012

other query modes : Identifier query | Coordinate query | Criteria query | Reference query | Basic query | Script submission | TAP | Output options | Help

Query : LVT151012 submit id

C.D.S. - SIMBAD4 rel 1.5.11 - 2017.03.21CET17:20:30

Available data : Basic data • Identifiers • Plot & images • Bibliography • Measurements • External archives • Notes • Annotations

Basic data :

NAME LVT151012 -- Gravitational Source

Other object types:	grv (Ref)
ICRS coord. (ep=J2000) :	ICRS ~ ~ (J2000.0) [ ] ~ ~
FK5 coord. (ep=J2000 eq=2000) :	ICRS ~ ~ (J2000.0) [ ]
FK4 coord. (ep=B1950 eq=1950) :	ICRS ~ ~ (J2000.0) [ ]
Gal coord. (ep=J2000) :	ICRS ~ ~ (J2000.0) [ ]

notes:

- For more information on the position, please see the sky location probability map (fits file) provided by the LIGO Collaboration.

Identifiers (1) :

NAME LVT151012

Problems to correct

- "NAME LVT151012 -- Gravitational Source" > "Gravitational Wave Source or event"
- Reference is wrong!
  `http://journals.aps.org/prx/abstract/10.1103/PhysRevX.6.041015`
- Sky position RA, dec is misleading!
  - Should be pointing to a skymap
    `https://losc.ligo.org/s/events/LVT151012/P1500227/LALInference_skymap1.fits.gz`

BBH catalog to Vizier?

- Context
  - Binary Black Holes: 3 during O1 (that is, 1/month)
  - Rate could go up to 1/few days in O3
  - Few tenths of BBH by the end of O3 (mid 2019)
  - Collect information in a single catalog
- Catalog for O1 in preparation
  - The LVC collaboration is collecting and formatting the data
  - Primary server is LOSC – could be also in the VO?
  - Limitations – Would that be incompatible with Vizier stds?
    - Don't have precise location of the source (don't have RA, dec)
    - But have a skymap for source localization
    - Include time-series snippet?

Notes – Mar 22 2017

- Meeting with Simbad and Vizier team at CDS Strasbourg
  - Present: ECM, Mark Allen, Pierre Ocvirk, Cécile Loup, Bernd Vollmer, Marianne Brouty
- GW entries in SIMBAD
  - Object type : “Gravitational Source” will be changed to “Gravitational wave event”
  - RA, dec coordinates will be removed for GW150914
  - Links to skymaps have been inserted
  - Acronyms – Currently in use: GrW. `http://cds.u-strasbg.fr/cgi-bin/Dic-Simbad`
    A formal request has to be formulated to IAU. The request form can be found here:
    `http://cdsarc.u-strasbg.fr/viz-bin/DicForm`

    [Should bring this to LVC DAC's attention]

Notes

- GW entries in SIMBAD
  - References – SIMBAD harvests papers from Astro journals. Doesn't look at Physics paper such as PRL. Connection with AAS but not with APS. Two actions:
    - Would a temporary feed from LVC editorial board possible? Agree on format.
    - The Simbad team will get in touch with the APS for a long-term and more general solution.
  - ECM will provide error bar for redshift in the three existing entries
  - No support for other fields relevant to GW event in SIMBAD (time, luminosity, binary property)
    - The right solution is to add links to catalog entries in Vizier (allows much more freedom in the field definition)

Notes

- BBH catalog
  - Few tenths of BBH by end of 2019?
  - Contents of BBH catalog being defined. Primarily stored at losc.ligo.org
  - Pushing to Vizier
    - It is OK to have successive versions of the catalog as more data is accumulated – as long as the table format does not change much
    - Once the LOSC BBH catalog is ready, just provide the URL
    - The catalog B/Corot is a very good example

      `http://vizier.u-strasbg.fr/viz-bin/VizieR-3?-source=B/corot/Bright_star`
    - It is possible to add skymaps to each catalog entries → visualization though a link to AladinLite
    - It is possible to add a waveform snippet to each catalog entries [HDF → FITS]