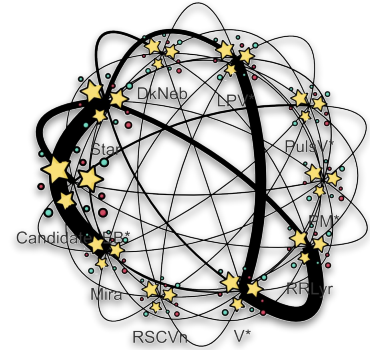
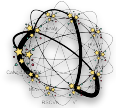


Visualisation de Bases de Données Des Graphs Un Service Web Générique

Actuellement, il n'existe pas d'outils publics disponibles pour la visualisation générique des bases de données des graphes. Les solutions existantes sont souvent propriétaires, coûteuses ou spécifiques à des domaines d'application particuliers. Cette présentation introduit un service web interactif, dynamique et hautement configurable, conçu pour la visualisation du contenu des bases de données des graphes, des requêtes et des résultats d'analyses. Les capacités de cet outil seront démontrées en utilisant les données graphiques du broker Fink de l'Observatoire Vera Rubin.



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 J1 2024
 Saint-Nicolas-la-Chapelle
 23-26/Sep/2024*



Lomikel Browser

Link Data Explorer 02.00.00+ [06/May/2022 at 18:18:38 CEST by centos for UCLab] [Reset](#)

UCLab-Proxy Add
Search AstroLabNet
Execute [Show - Table -](#)

Customize the interactions with the graph:
 Cluster by group type Cluster by group size Expand all clusters Show all edges Hierarchical Up/rl Size/hierarchy Blue
 Clusterize Zoom cluster Initiate size Get children Get parents Remove old
filter: [Apply](#) select: limit(10)

| id | label | circcoeff | circunc | diffmaglim | fid | field | jd | magzpsci | magzpscirms | magzpscirunc | nid | pdiffilename |
|-------------|----------------|---|------------|------------|-----|-------|-----------------|----------|-------------|--------------|------|---|
| 20844949584 | priv_candidate | -0.0689774 | 3.70181E-5 | 20.1174 | 1 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_202111 |
| 20844949584 | id: | 20844949584 | | | | | | | | | | |
| 20844949584 | label: | priv_candidate | | | | | | | | | | |
| 20844949584 | circcoeff: | -0.0689774 | | | | | | | | | | |
| 20844949584 | circunc: | 3.70181E-5 | | | | | | | | | | |
| 20844949584 | diffmaglim: | 20.1174 | | | | | | | | | | |
| 20844949584 | fid: | 1 | | | | | | | | | | |
| 20844949584 | field: | 299 | | | | | | | | | | |
| 20844949584 | jd: | 2459527.7947685 | | | | | | | | | | |
| 20844949584 | magzpsci: | 26.02 | | | | | | | | | | |
| 20844949584 | magzpscirms: | 0.0342466 | | | | | | | | | | |
| 20844949584 | magzpscirunc: | 2.67963E-5 | | | | | | | | | | |
| 20844949584 | nid: | 1773 | | | | | | | | | | |
| 20844949584 | pdiffilename: | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz | | | | | | | | | | |
| 20844949584 | pid: | 1773294764315 | | | | | | | | | | |
| 20844949584 | programid: | 1 | | | | | | | | | | |
| 20844949584 | program: | Kulkarni | | | | | | | | | | |
| 20844949584 | rversion: | 117_fs_c3 | | | | | | | | | | |
| 20844949584 | rcid: | 43 | | | | | | | | | | |
| 20844949584 | lbl: | priv_candidate | | | | | | | | | | |
| 21992865832 | priv_candidate | 0.121702 | 2.35149E-5 | 20.1729 | 2 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 21992865832 | priv_candidate | -0.0435896 | 4.32017E-5 | 19.6978 | 1 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 21992874024 | priv_candidate | -0.0866524 | 3.42425E-5 | 20.5701 | 1 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 23462101224 | priv_candidate | -0.082068 | 3.16767E-5 | 20.7444 | 1 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 23462105320 | priv_candidate | 0.120364 | 2.04689E-5 | 20.6909 | 2 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 23462109416 | priv_candidate | -0.0794315 | 2.80797E-5 | 20.657 | 1 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 23463370056 | priv_candidate | 0.134517 | 2.73896E-5 | 19.568 | 2 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 26003374152 | priv_candidate | 0.125216 | 2.13962E-5 | 20.5773 | 2 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |
| 27194933248 | priv_candidate | 0.121286 | 2.34516E-5 | 20.5467 | 2 | 299 | 2459527.7947685 | 26.02 | 0.0342466 | 2.67963E-5 | 1773 | ztf/archive/sci/2021/1109/294768/ztf_20211109294768_000299_zg_c11_o_q4_scinreldiffimg.fits.gz |

Select graph server and initial graph, then select an element to see possible actions.

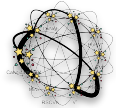
Sending Gremlin request to //134.158.74.85:24445: g.V().has('lbl', 'AstroLabNet').limit(10)
Sending Gremlin request to //134.158.74.221:8080:LinkDataExplorerProxy.jsp?server=http://134.158.74.85:24445: g.V().has('lbl', 'Alert').limit(10)
Showing 10 new elements

Lomikel Browser is a Web Service to visualize and any graph with Gremlin API.

Written in JSP, JavaScript, Groovy and Gremlin.

Objects (Vertices and Edges) can be manipulated and interrogated.

It works out-of-the box with the default style, but can be heavily customized by visualization stylesheets and plugins.



Lomikel Browser

Graph context-sensitive operations
And introspection

Other ways of graph analyses
(as plugins)

Other plugins can be called
For more detailed analyses

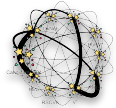
Selection of the Graph server
And initial request

The screenshot shows the Lomikel Browser interface. At the top, there's a search bar and a table of results. The table has columns for 'id', 'label', 'scoreoff', 'scoreons', 'diffmaxfm', 'fid', 'field', 'jid', 'maxscore', 'maxscoretime', 'maxscoretime', 'nid', and 'editInFiletime'. The graph visualization below shows a central node 'prc_candidate:245952.8173958' connected to several other nodes. The interface also includes a sidebar with options like 'Cluster by group type', 'Cluster by group size', and 'Expand all clusters'.

Global operations
on Graph

Graph shown as
an interactive table

Interactive view of a Graph
(Customisable by a stylesheet)



Customisation

Stylesheet

```
stylesheet.nodes.datalink = {
  properties:{gremlin:"valueMap('name', 'technology').toList()[0]"},
  graphics: {
    label:"name",
    title:"name",
    subtitle:"technology",
    group:" ",
    shape:"dot",
    image:"",
    borderRadius:"0",
    borderWidth:"1",
    borderDashes:[1,0],
    value:"0"
  },
  actions:[
    {name:"Link", url:{gremlin:"id().next().toString().replaceFirst(\"^\", \"DataLink.jsp?id=\")" }, target:"result" },
    {name:"Fits", url:{gremlin:"id().next().toString().replaceFirst(\"^\", \"DataLinkFits.jsp?id=\")" }, target:"result" },
    {name:"Show", url:{gremlin:"id().next().toString().replaceFirst(\"^\", \"Node.jsp?id=\")" }, target:"result" },
    {name:"Table", url:{gremlin:"id().next().toString().replaceFirst(\"^\", \"Nodes.jsp?id=\")" }, target:"table" }
  ]
}

stylesheet.nodes.alert = {
  properties:{gremlin:"valu
  graphics: {
    label:"lbl",
    title:"lbl",
    subtitle:" ",
    group:{gremlin:"values(
    shape:"hexagon",
    image:"",
    borderRadius:"0",
    borderWidth:"2",
    borderDashes:[1,1],
    value:{gremlin:"out().o
  },
  actions:[
    {name:"Show", url:{g
    {name:"Table", url:{g
  ]
}
}
```

Stylesheet is a JSON document, describing possible Vertices and Edges, containing scripts in Gremlin or JavaScript.

Plugins can specify

- how Vertices/Edges are shown
- their context-sensitive operations as either call to internal plugins or external services.

Many **standard plugins** exist:

- correlations/overlaps (i.e. properties of Edges between Vertices) as table and Venn diagrams
- scatterplots for Vertex/Edge properties
- time dependence of Vertex/Edge properties (if time property defined)
- visualization of embedded data (pictures,...)
- navigation to connected databases (SQL, NoSQL or Graph)

ATLAS ATLAScope 01.02.00+ [24/Apr/2021 at 10:12:16 CEST by atelvid for CERN] [Reset](#)

Search: ATLAS
Execute: g.V().has('lbl', 'canonical')

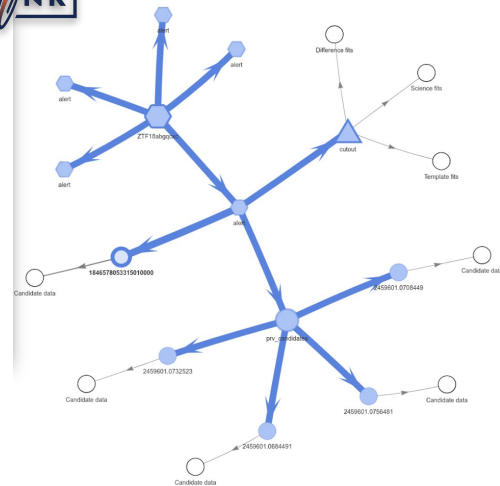
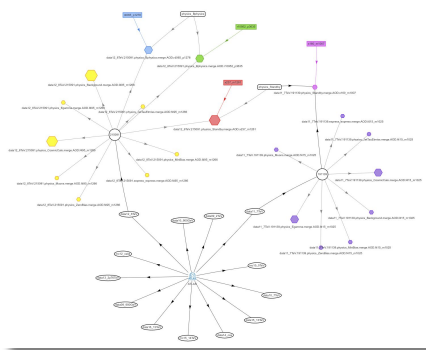
Actions: canonical-AOD, google Chrome

version: 1832, m1812
Pulsio: 1526878
project: data17_13TeV
streamers: physics, Full
proptop: merge
data17prod: 1832
data17prod: 1832
displays: 1832
98, 1253

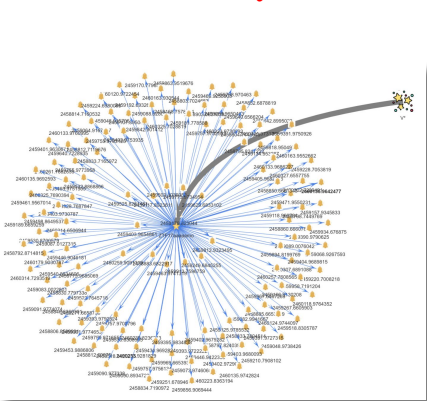
events: nuclei: 10221559
nuclei: 26-Feb-18 12:34:18 CET 2017
files: 742
events: 10221559
updated: 21-Mar-18 09:29:07 CEST 2021
is_open: false
is_deleted: false
status: UNPUBLISHED
has_rmc: true
has_trigger: true
prod: canonical
lbl: canonical
project: true
fullfill: true

Cluster by group type | Cluster by group size | Expand all clusters | Show all edges | ...
Clusterize by zoom cluster | stabilize | get children | get parents | remove old
filter: [mnl,10] | Apply | select | [mnl,10]

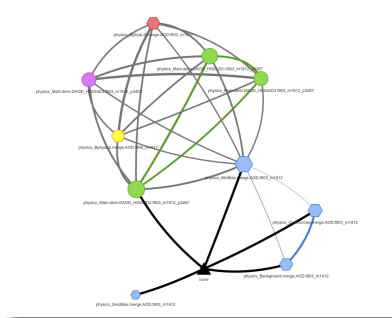
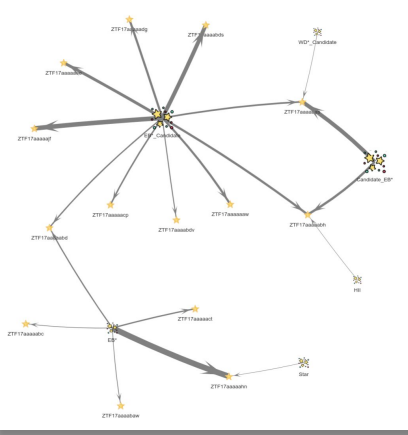
Examples

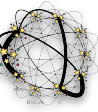


Vertex introspection

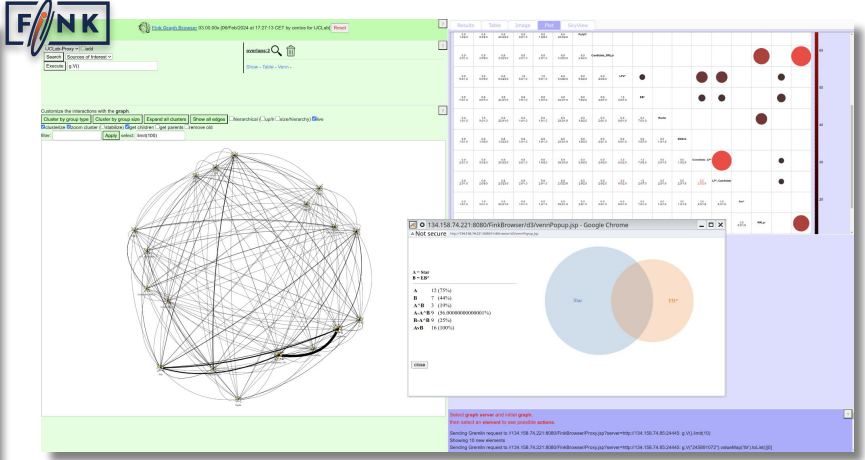
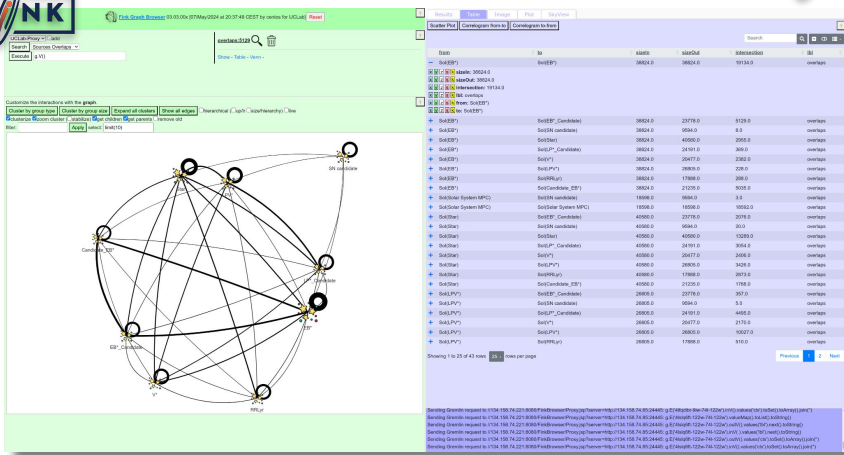


Graph with relations to data in external database (HBase in this case)





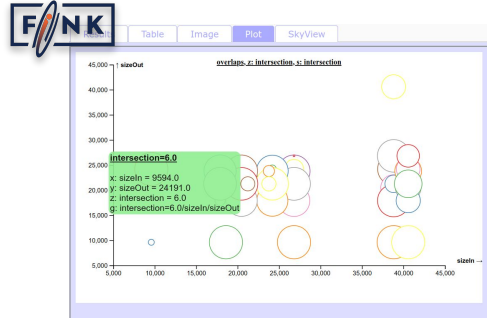
Overlaps/Correlations

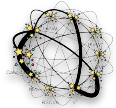


Vertex: Group of Fink Alerts of certain type
 Edge: Number of common Alerts to both Vertices
 (=overlap/correlation)

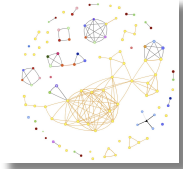
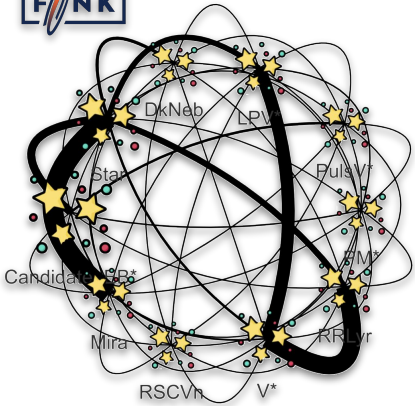
Overlaps shown as a matrix
 and a Venn diagram (for one overlap)

Overlaps shown
 as a scatterplot

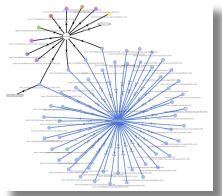
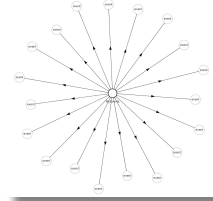
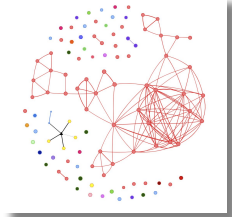
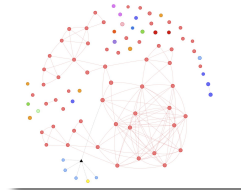




Visualisation de Bases de Données Des Graphs Un Service Web Générique



Home: <https://cern.ch/hrivnac/Activities/Packages/Lomikel>
Git: <https://github.com/hrivnac/Lomikel.git>



Future development:

- light version to allow visualization of vast amount of data (but with less interactivity)
- standalone application (not a Web Service)
- possibility to modify and create objects in the database