Candidate Event Vetting

LV-EM MIT Town Hall

March 16 2018

Event Vetting

- GCN Notice will alert LIGO-Virgo personnel who sign up for alerts.
- A Rapid Response Team composed of experts in various aspects of the alert chain convenes online within minutes of the alert.
- The charge of the RRT is to either retract the GCN Notice or issue a GCN circular.

RRT

- RRT will comprise of:
  - Team Leads: Site Advocate(s) from LIGO and a Site Advocate from Virgo. The Site Advocates will be the local run managers or their designees.
  - Operators from the LIGO and Virgo sites.
  - An online EM Advocate.
  - At least one pipeline expert for the triggering analysis.
  - DetChar experts from LIGO and Virgo
  - A GraceDB expert

Rapid Response Teams

- Events that do not pass the FAR threshold but are seen to be high quality may be promoted to OPA by this RRT.
- A regular meeting will review such events and any other lower quality events.
- We may move the discussion of BBH events to this discussion:
  - Will have some dependence on event rate.
  - Slower retraction of delayed circular for such events.

Reasons to reject an event

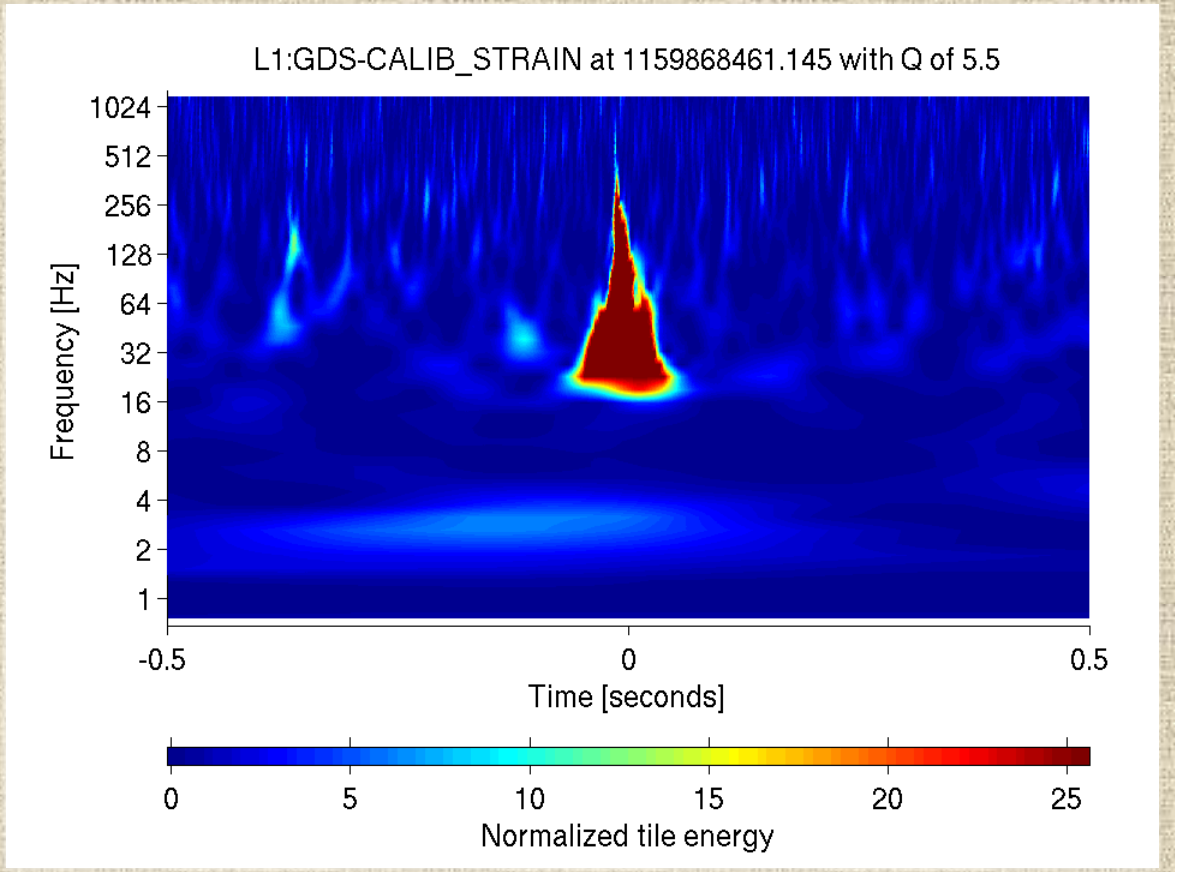
- **An issue with one of the instruments.**
- We typically stay in observation mode if:
  - There is no prompt fix available and there is a chance that some searches can use the data.
  - There is a local disturbance that is not strong enough to transition the instrument from the low noise state.
- **An issue with analysis software.**

Reasons to reject an event

- **An issue with analysis software. An issue with the data quality:**
  - Evaluated by experts on detector noise artifacts from the Detector Characterization groups.
  - In O3 we will automate the Detector Characterization checklist.
  - Process of analyzing the data for artifacts can take O(hours).
  - Caveat: Some instrumental artifacts may not have a good veto. In this case we err on the side of accepting the event.

Example: “blip” glitch

- Can mimic high-mass BBH merger.
- No good veto for this during O2 (but work continues).



Vetting of Events

- A regular discussion involving a wider array of experts and opinions will convene on a daily basis as needed.
- May end up retracting old or releasing new alerts based on this meeting.
- Cadence will be daily if the event rate warrants, otherwise a few times weekly:
  - We will react to all alerts promptly with a smaller team.
  - Retractions and circulars will still occur, but based on less input.