LSC and Virgo will release significant (< 1/100 yrs) triggers promptly to the entire scientific community after the Collaborations have published papers about 4 GW events.

- Possibility of MoU for lower significance threshold and/or lower latency in order to carry out a more systematic joint observing campaign and combined interpretation of the results.

LIGO/Virgo will release confident events publicly during the upcoming O3 observing run, planned to begin in late 2018.

- Extensive discussion within LVC on the details of the implementation of Open Public Alert (OPA), both on policy and on technical requirements.
- Development of infrastructures to send OPA. Data quality and vetting automation to reduce the latency and deal with an increasing rate of astrophysical events.
GW OPA in the time domain astronomy

Goals of OPA

To maximize the science the entire scientific community can do with the GW detections

To minimize the chance of missing EM/neutrino counterparts

- how to maximize the chance to detect neutrino/em counterparts and maximize the science of astronomers?
- how to maximize the LVC core science (LIGO and Virgo are not only user-facilities)?
- how to maximize science which requires combined GW/EM analysis?

What constitutes an Open Public Alert?

1) Selection criteria for OPAs
2) OPA transmission and latency
3) GW event information in OPA

ALL under discussion within LVC...
we welcome feedback/suggestions from astronomers
What constitutes an Open Public Alert?

1) Selection criteria for OPAs
2) OPA transmission and latency
3) GW event information in OPA

Should all type of systems (including unmodelled bursts) be eligible to produce OPAs?

What is the target of “purity” for OPA acceptable by astronomers and LVC (90%/99%)? FAR/contamination/impurity “budget” different among event types?

‘p_astro’ - probability that a given event is astrophysical (e.g. BBH)
What constitutes an Open Public Alert?

1) Selection criteria for OPAs
2) OPA transmission and latency
3) GW event information in OPA

Lowest latency achievable: minute scale. Aim at automatic vetting and alerting through GCN notices → unvetted candidate

What is the acceptable latency for confirmation/retraction?

Providing lowest latency candidate could be affected by failures of automatic vetting procedures!
What constitutes an Open Public Alert?

1) Selection criteria for OPAs
2) OPA transmission and latency
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What is the **minimal set of information** to maximize the success of EM observations?

**Time, initial distance, initial 3D skymap, source-classifier?**

Anything else?

*Some information will be promptly available, even though with significant errors and very likely to change over the course of hours, days and months with the ultimate result becoming available (most likely) when offline analyses complete*
O3 MoU?

To make available **lower latency GW candidate alerts**? (if unvetted notice sent!)

To make available **lower significance GW candidate alerts**?

- *GW transient events with a FAR at, say, 1/month don’t meet the requirements (at least of the LVC) to be announced as GW detections; what is the science payoff in pursuing such alerts in EM/neutrinos: more BBHs/BNSs detections? Statistical studies?*
- *Low-confidence candidates may later be rejected, while others may remain indeterminate*

Science-focused MOUs which target specific science goals jointly with astronomers? Call for joint scientific projects?

- *specific science-focused MoU which enable joint analyses/interpretation, exchange of more information (both-ways) on the candidate events and to regulate joint/separate publication (e.g. cosmology, NS physics)*