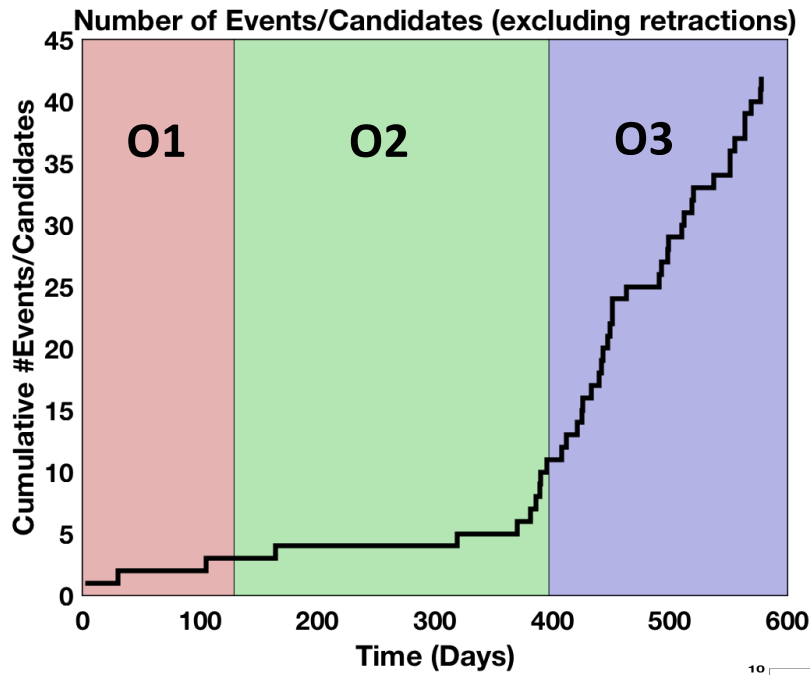


O3 LIGO-Virgo-KAGRA update, September 26 2019

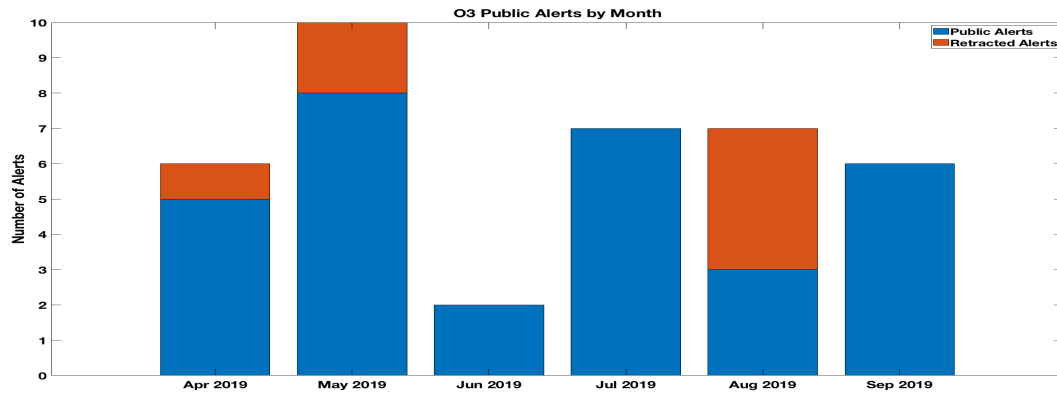
Keita Kawabe, Shinji Miyoki,
Brian O'Reilly, Matteo Tacca



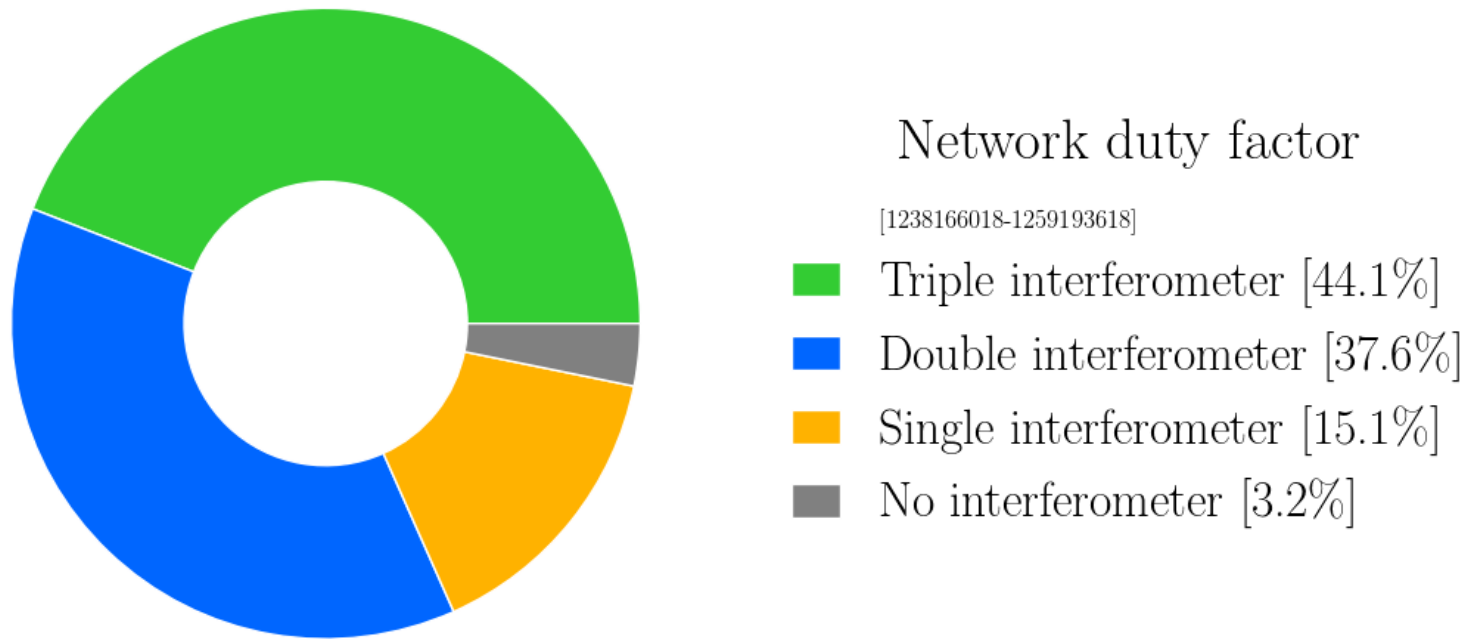
38 Alerts so far in O3, **7** retractions.

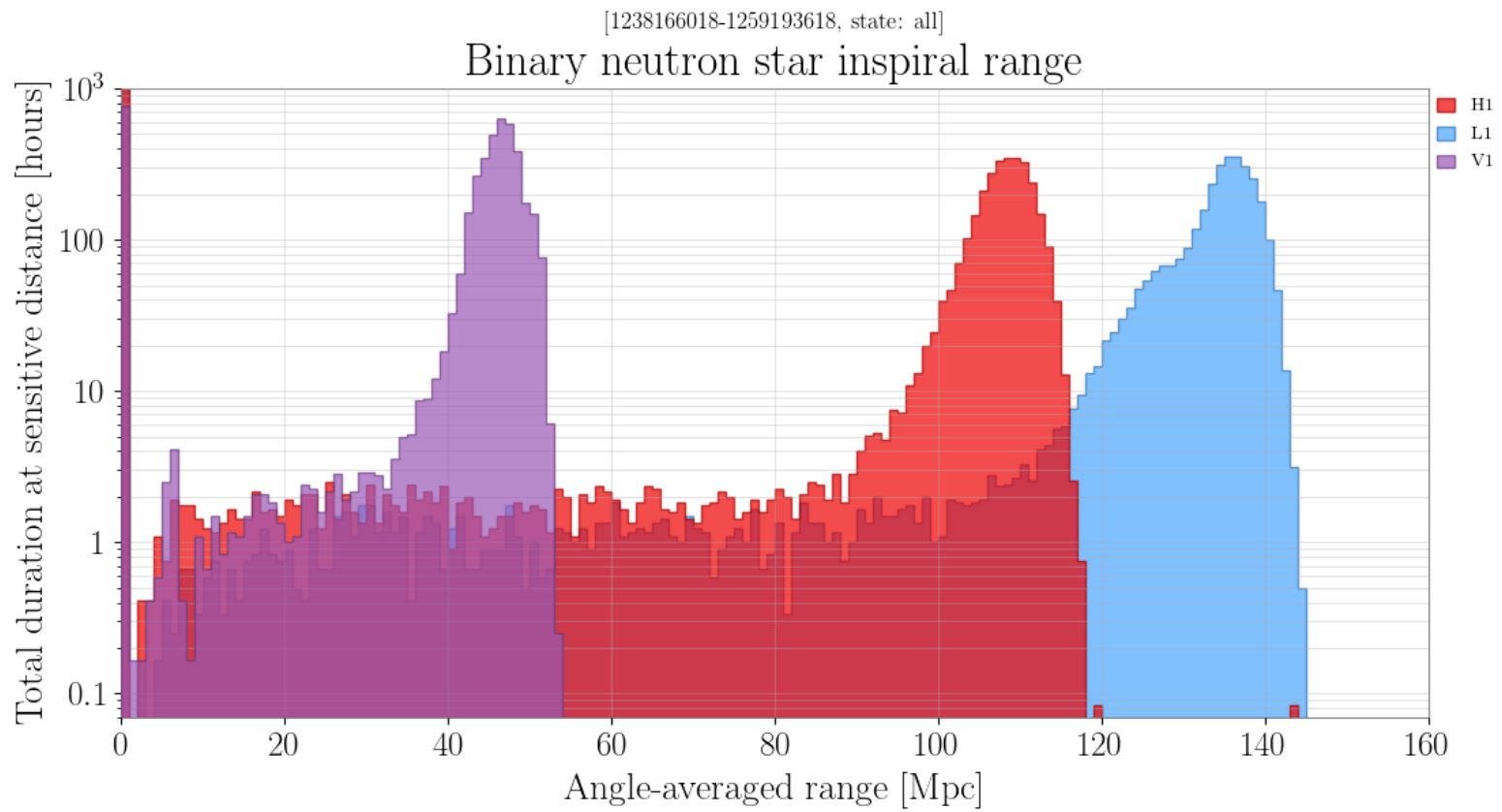
Mean number of alerts (not retracted)

5.3 +/- 2.3 per month



Detector Performance: O3 Cumulative Duty Factor





New Alerts Since August

1. [S190828j](#): FAR = $1/10^{13}$ years, $P_{\text{BBH}} > 99\%$
2. [S190828l](#): FAR = $1/684$ years, $P_{\text{BBH}} > 99\%$
3. [S190901ap](#): FAR = $1/4.5$ years, $P_{\text{BNS}}=86\%$, $P_{\text{Terrestrial}} = 14\%$
 - Updated skymap: 90% CR = 14753 deg^2
4. [S190910d](#): FAR = $1/8.5$ years, $P_{\text{NSBH}}=98\%$, $P_{\text{Terrestrial}} = 2\%$
 - Updated sky localization with Virgo added. Still 2482 deg^2
5. [S190910h](#): FAR = $1/10$ months, $P_{\text{BNS}} = 61\%$ $P_{\text{Terrestrial}} = 39\%$
6. [S190915ak](#): FAR = $1/32.5$ years, $P_{\text{BBH}} > 99\%$
7. [S190923y](#): FAR = $1/8$ months, $P_{\text{NSBH}} = 68\%$, $P_{\text{Terrestrial}} = 32\%$
8. [S190924h](#): FAR = $1/10^{10}$ years, $P_{\text{MASSGAP}} > 99\%$ HasNS = 30%, HasRemnant < 1%

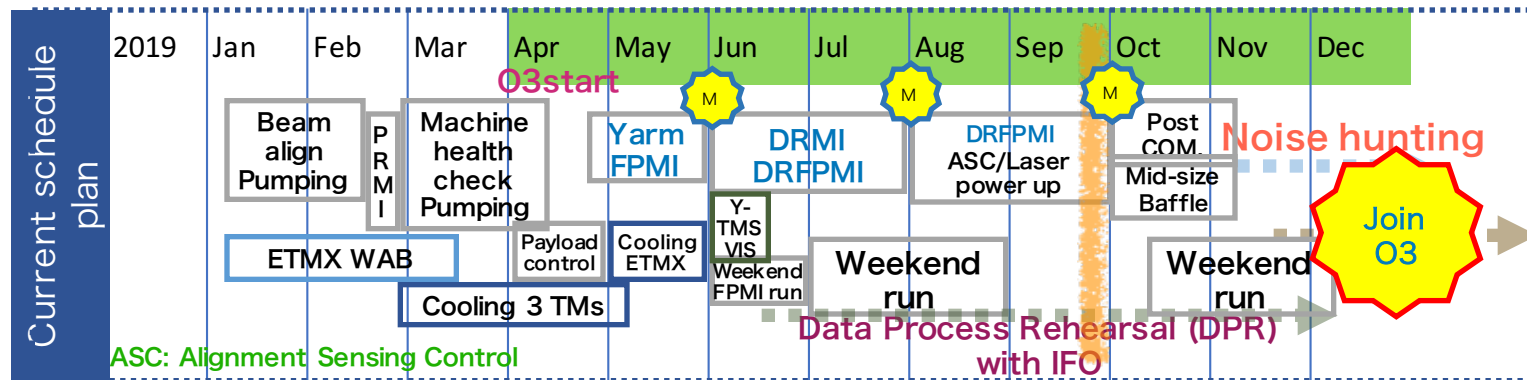
Retracted Alerts Since August

- [S190816i](#) : FAR = 1/2 yrs, Detector Characterization and pipeline expert evaluation recommended retraction due to instrument noise.
 - Retraction took **20 minutes** from time of preliminary notice.
- [S190822c](#): After removal of a loud glitch in L1 no significant signal remained.
 - Initial indications were a BNS candidate with very low FAR.
 - Retraction took **102 minutes** from time of preliminary notice.
- [S190829u](#): Automatic gating in the GstLAL pipeline rejected this event during the vetting process. This automatic gating of glitches is now deployed to production.
 - Retraction took **26 minutes** from time of preliminary notice.
- Since August 15 :
 - Preliminary Notice issued on average approximately **9** minutes after the Event.
 - Initial Notice issued on average approx. **36** minutes after the Event.
 - Retraction issued on average approximately **44** minutes after Event.

KAGRA Present Status

Plan on 6th May

We are here



- FPMI, SRMI configuration with low laser power was realized in August/September. The first sensitivity was obtained with FPMI configuration. 3.5 orders improvement is necessary to reach ~ “1” Mpc Binary range. (The target is 8 ~ 25Mpc in O3)
- DRFPMI (or PRFPMI) configuration to obtain the better sensitivity was not realized yet.
- Several systems (Vibration Isolation, Auxiliary Optics, Digital System, Main Interferometer) in KAGRA are now under optimization.

Commissioning Break 1st to 31st Oct 2019

- Expect no observation by LIGO/Virgo: 1/Oct/2019 1500 UTC - 1/Nov/2019 1500 UTC.
- New end date April 30 2020 to preserve 1 year observation.