The O1 Advanced LIGO science run

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Contents

LIGO Gravitational Wave observatory scientific run O1 spanned September trough January 2016.
It produced two positive detections of GW events.

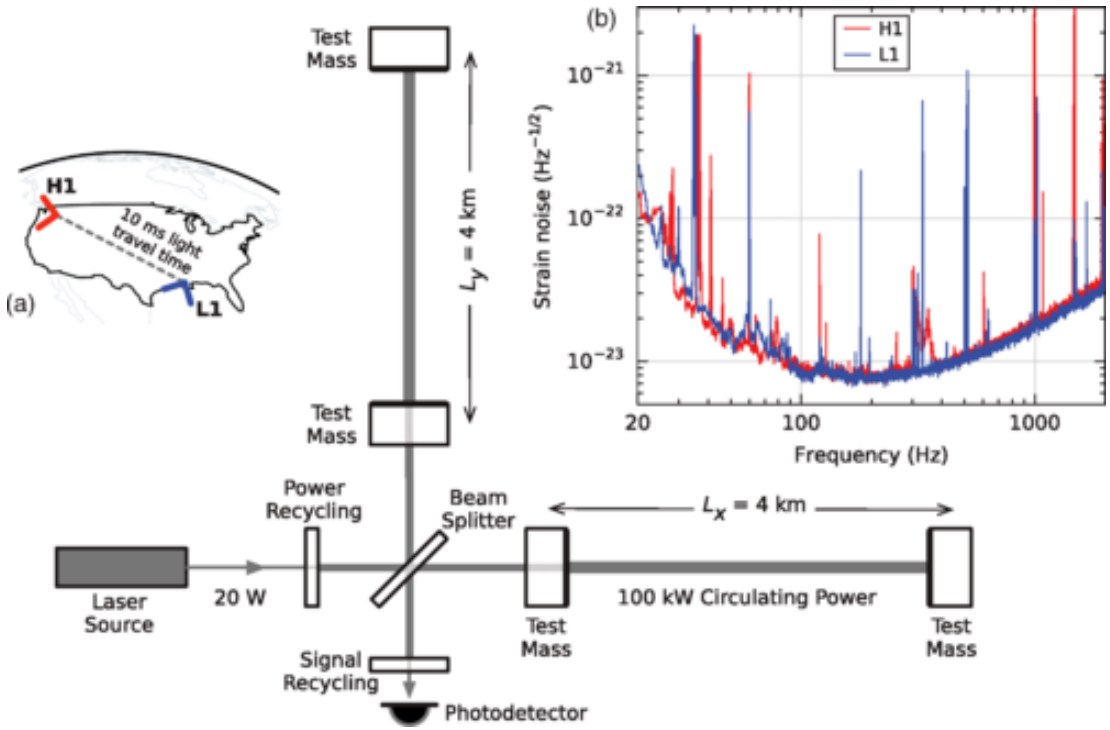


Figure: The detector configuration.

There was a positive detection in September 14 of 2015, 4 days before LIGO O1 scheduled observations start, with an estimated S/N ratio of almost 24.
The pipeline final calibration for event detection was completed just 2 days before cWB pipeline reported a candidate.

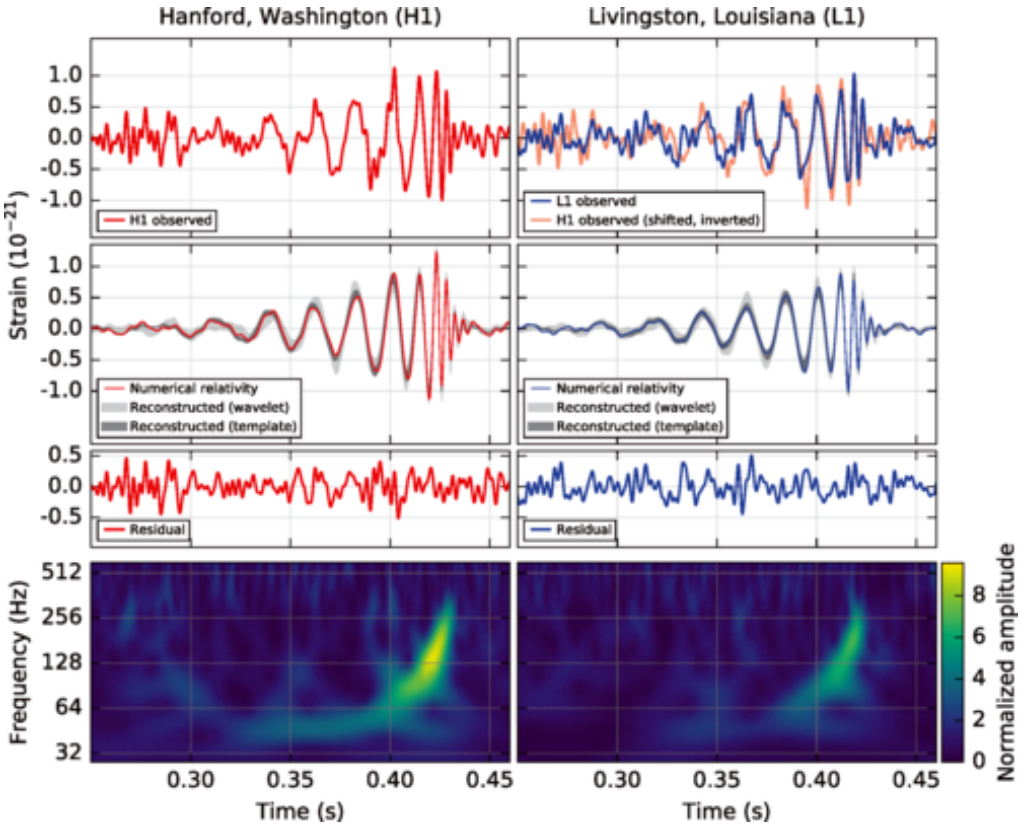
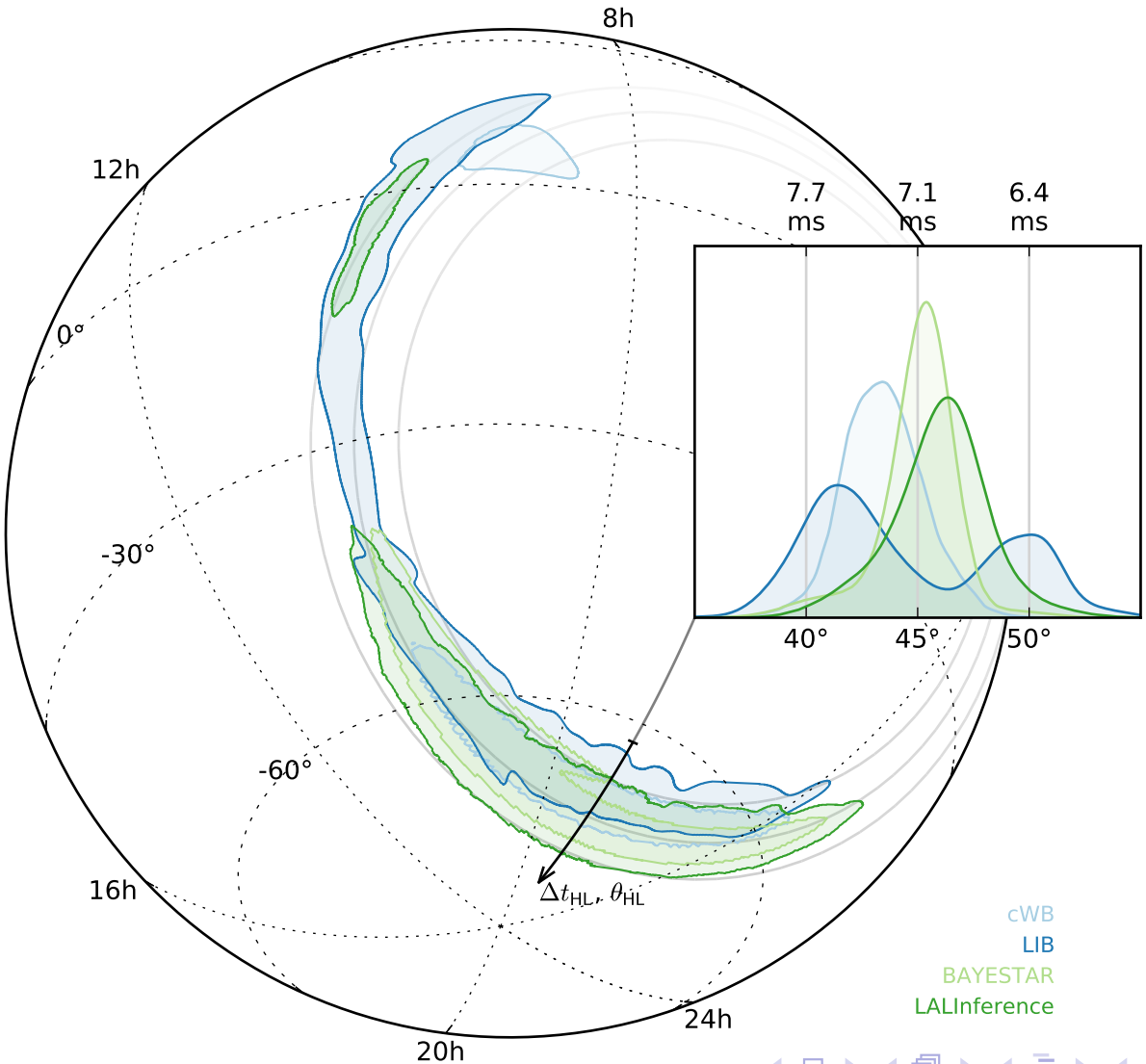


Figure: Pipeline results, for matched filter techniques.

The candidate was estimated to come from a huge area in the sky.



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LALinf. This pipeline uses Compact Binary Coalescence (CBC) template matching, by modelling the data with a parametrized CBC waveform. This is the most accurate pipeline, but it takes longer to compute due to high dimensionality.

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At this time there was no information about the true nature of the source. And the scenario was urging for more data, specially electromagnetic (EM) follow up.

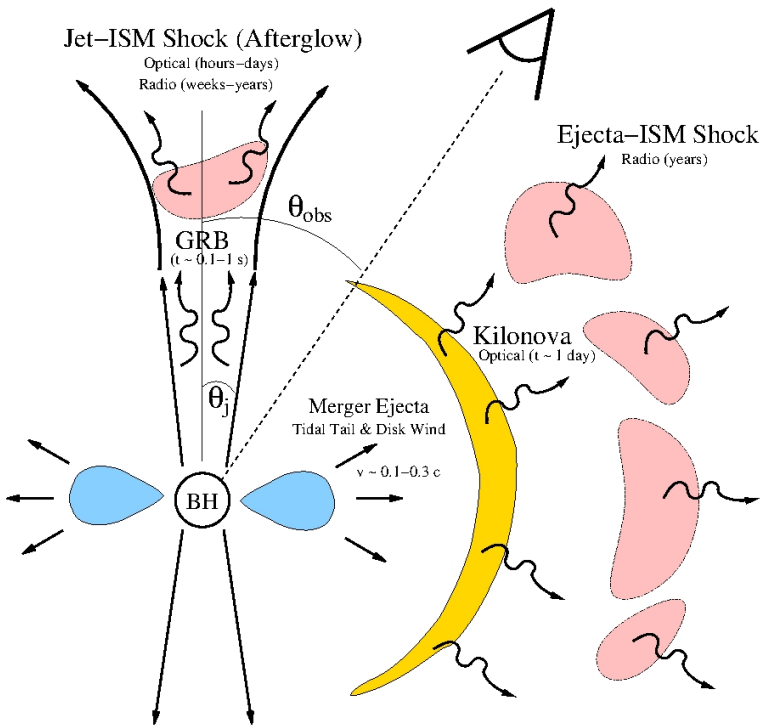

Figure: Compact object merger cartoon

The project TOROS, and its pilot campaings named TORITOS, are a collaboration for the installation of optical telescopes at the Puna montains in Salta, at nearly 4600 m.
This places have really great atmospheric conditions for astronomy, and a high percentage of clear nights.

The collaboration participated in the EM searches of GW150914.

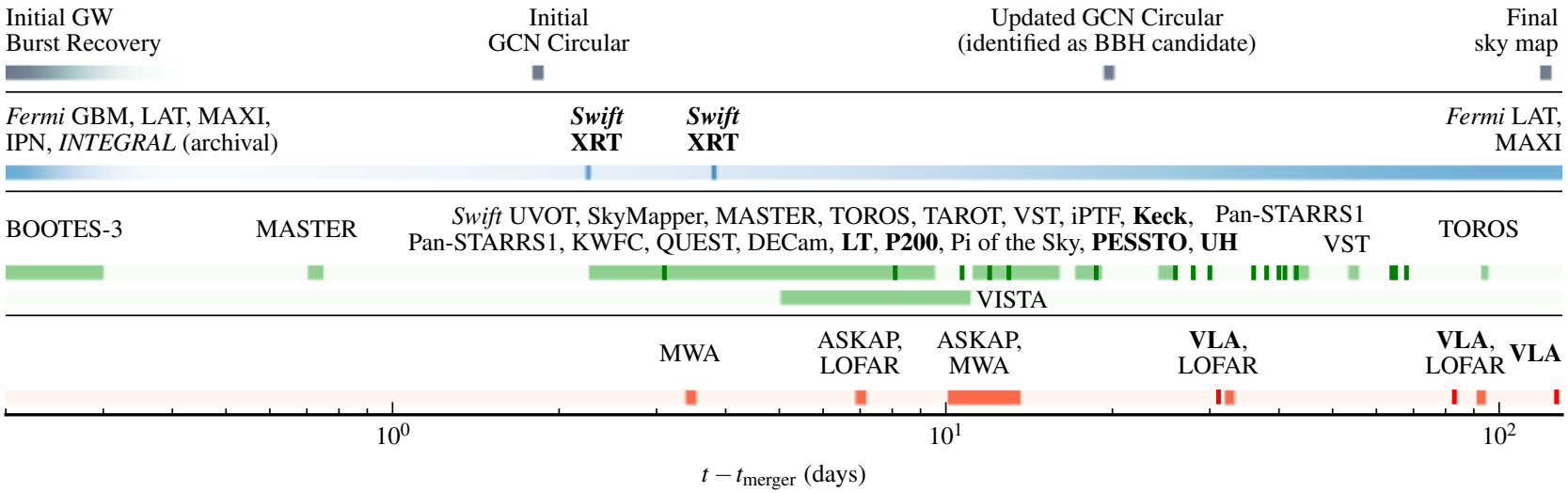

Figure: Timeline of detection

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Currently the project lacks grant funding, but the installation of telescopes at lower levels (3400m) in Tolar Grande town are