



Contribution ID: 29

Type: **Contributed Talk**

## Transient localization web service based on open gravitational-wave data for the multi-messenger community.

*Monday, 6 June 2022 16:20 (20 minutes)*

The LIGO-Virgo-KAGRA O4 observing run will bring the amount of gravitational wave (GW) detections to an unprecedented level. The full exploitation of this opportunity will be possible if we provide innovative tools for quick data analysis using intuitive graphical user interface. In particular this approach is important in the electromagnetic follow-up decision process, as the time spent on investigating the interest of an alert must be short.

Hereby we present a web service <https://www.virgo.pg.infn.it/maps> integrated in the environment of the International Virtual Observatory Alliance (IVOA) and we sketch its implementation. The application was developed in accordance with the FAIR principles, allowing the efficient exchange of essential information between the different partners in the multi-messenger observation [1]. It provides an immediate and accurate visualization of the localisation of astronomical transients available in the GW open database [2]: each localisation of the GW source, provided through a Multi-Order Coverage (MOC) map [2-3], can be tested and intersected with the sky area visible from an observatory of interest. User parameters and the output information is accessible from a web browser in a clear and standardized format. Finally we would like to point out the technological advantages of our service, from the point of view of future technical challenges, due to the anticipated exponential increase of transient detections [4-5] as well as to the growth of the heterogeneous multi-messenger community.

### Bibliography:

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**Session Classification:** Data analysis

**Track Classification:** Data analysis