

Catch me if you can: brief optical flashes as counterparts of gravitational wave signals

Thursday 15 May 2025 18:25 (10 minutes)

Persistent monitoring of the sky has revealed the presence of transient astronomical phenomena in the scale from milliseconds to days. We learnt to identify newly born and short lasting (< 1 s) signals in the radio frequencies, in the X-rays and gamma-rays. However, it remains extremely challenging to monitor the sky in the visible domain with high temporal resolution. I will present the scientific potential in monitoring gamma-ray bursts (GRBs) and gravitational wave (GW) signals with high time-resolution optical observations. In the context of the GRB prompt emission, the fast optical observations are essential to reveal the origin of the radiative and dissipative processes taking a place in the ultra-relativistic jets of GRBs. In the context of multi-messenger astronomy, prompt optical observations of GWs from binary neutron star mergers provide a unique channel for fast and accurate localisation of GWs. I will then discuss the expected detection rate of these optical flashes with several proposed instruments, including MezzoCielo.

Author: OGANESYAN, Gor (Gran Sasso Science Institute)

Presenter: OGANESYAN, Gor (Gran Sasso Science Institute)