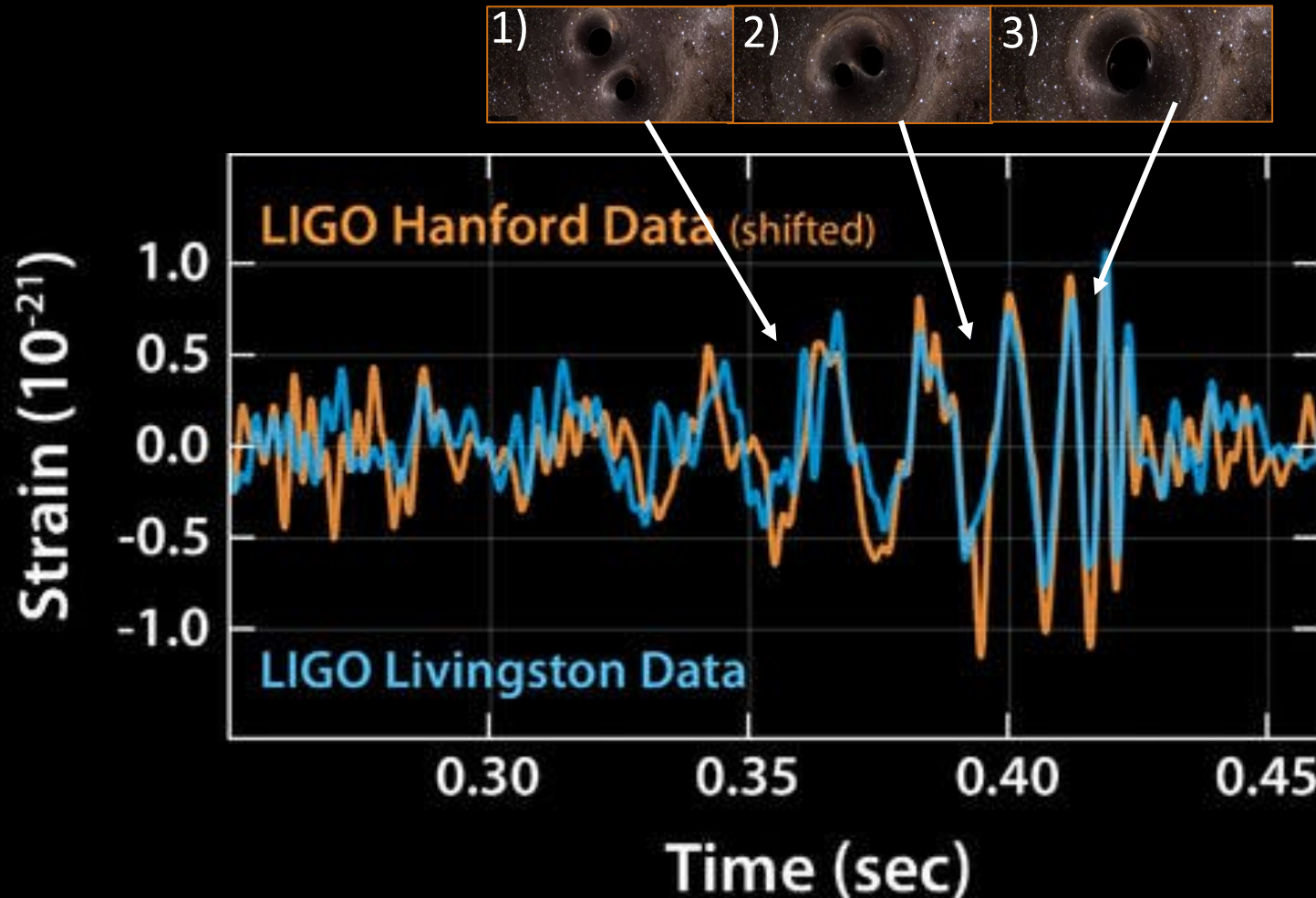


MOM

Multimessenger Observatory Model

Study of gravitational wave in association with
other astrophysical phenomena.

Observation of Gravitational Waves from Binary Black Hole Merger



- 1) The black holes orbit one another creating a sequence of GW
- 2) The frequency increases as well as the emitted GW energy while the orbits shrink
- 3) After a huge spike, the two compact objects form a single black hole, shutting off definitively

GW impulsive sources

Supernova

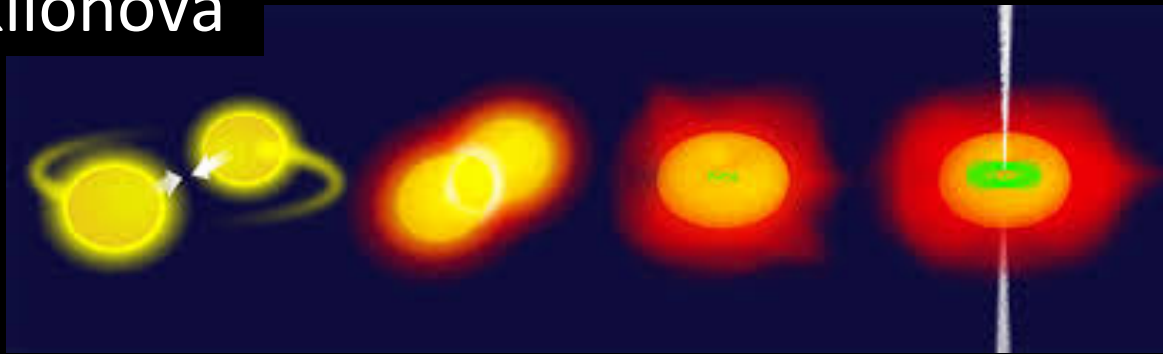


Collimate jet



Magnetar

kilonova



NS-NS merger

NS-BH merger



Isotropic emission

Searching for correlation between GW impulsive signals and EM signals

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LNF Multimessenger
Experimental
Observation

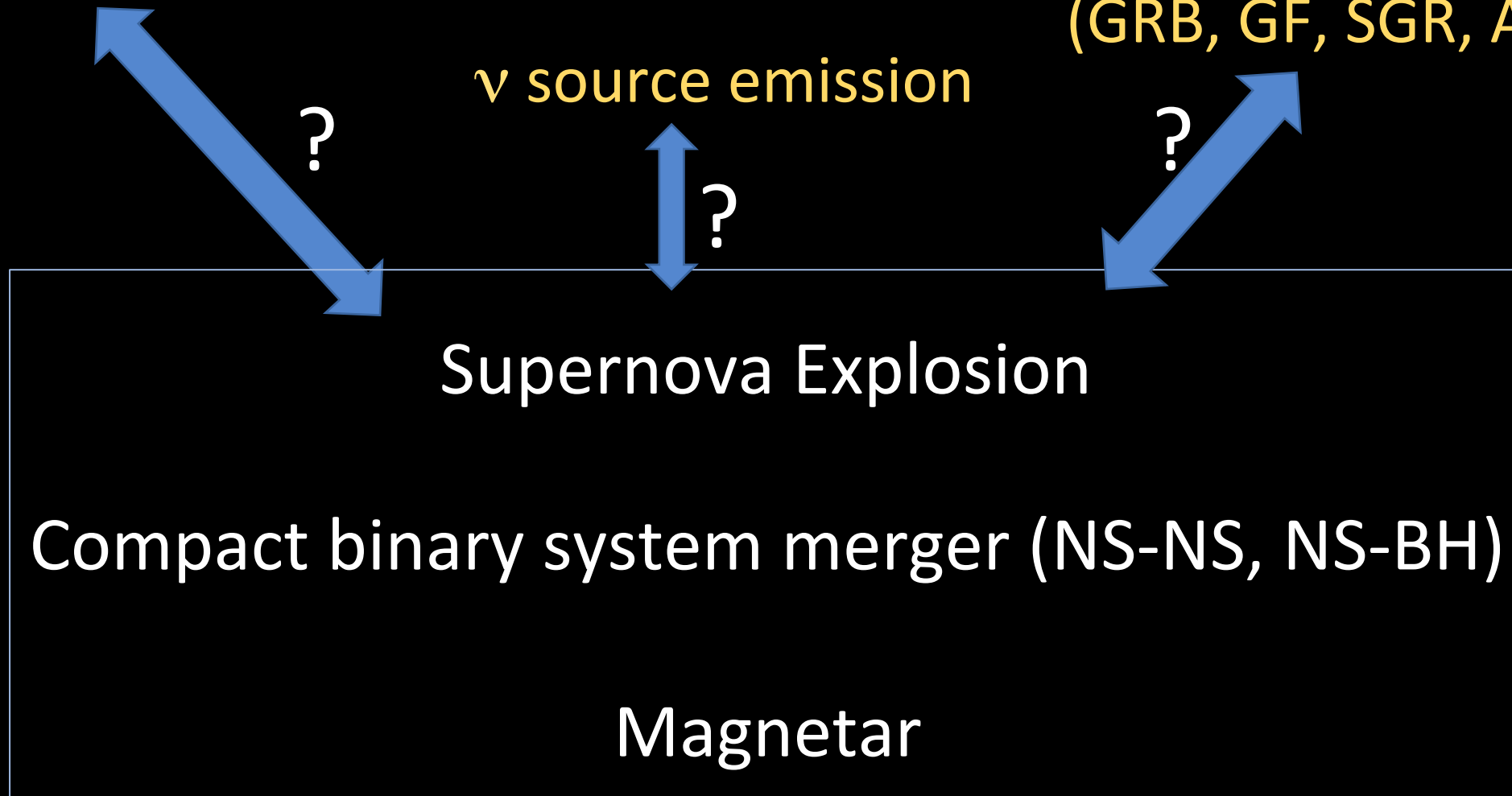


Multimessenger Observation Questions

GW impulsive source

EM observations
(GRB, GF, SGR, Afterglow)

ν source emission



?

?

?

Supernova Explosion

Compact binary system merger (NS-NS, NS-BH)

Magnetar

Multimessenger Observation Strategy

GW signal measurement

- Trigger Time
- Signal Amplitude
- Frequency Evolution
- Equation of State (EOS)

EM signal detection (GRB, GF, SGR, Afterglow)

- Trigger Time
- Brightness
- Duration time
(Long-Short GRB classification)



Correlation analysis

Multimessenger Observation Model

The measurement results are reported in a single outline

- Collecting the most accredited theoretical models for impulsive signals (supernova, kilonova, magnetar, binary compact system merger, NS-NS, NS-BH)
- Comparing the observed events in light of EOS and of experimental physical parameters (using Open Data, Galactic Circular Network (GCN), referenced scientific literature)