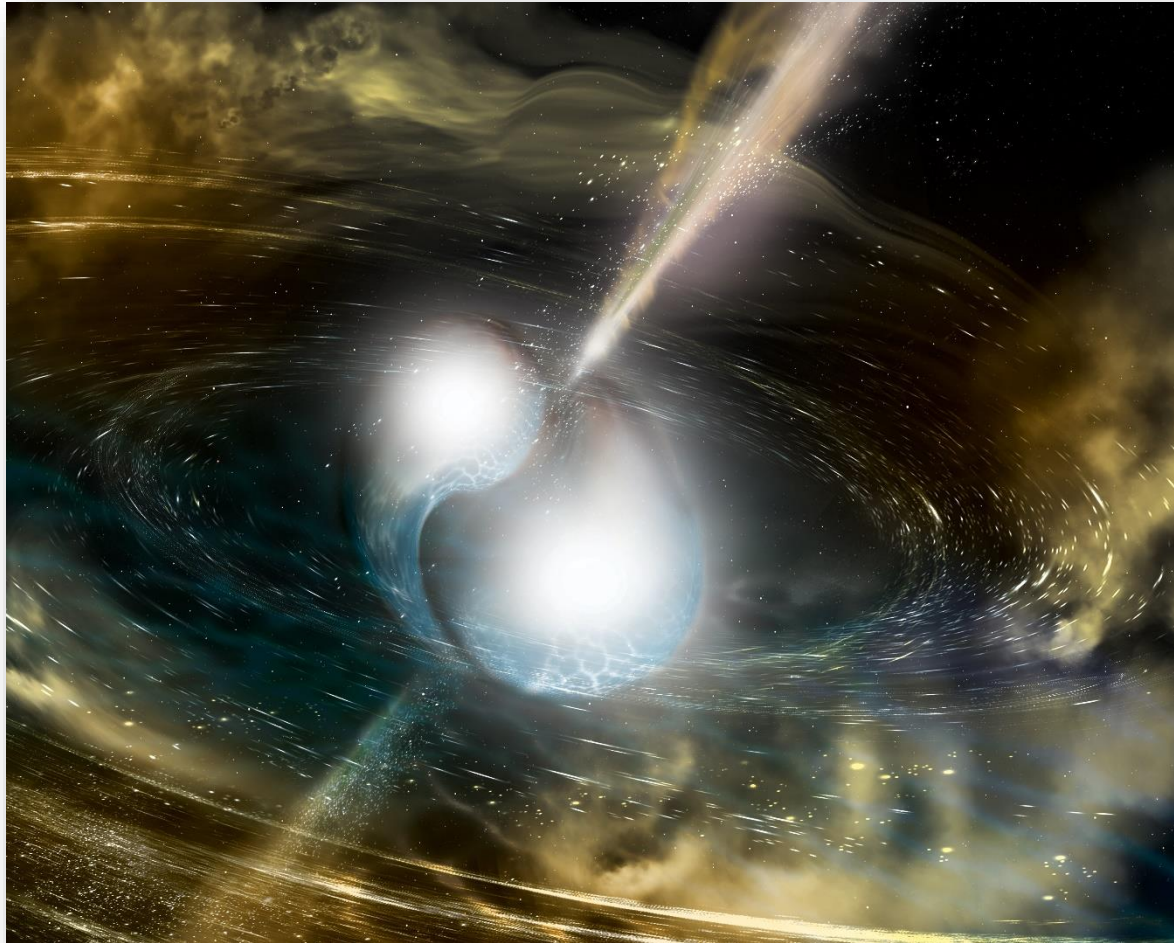


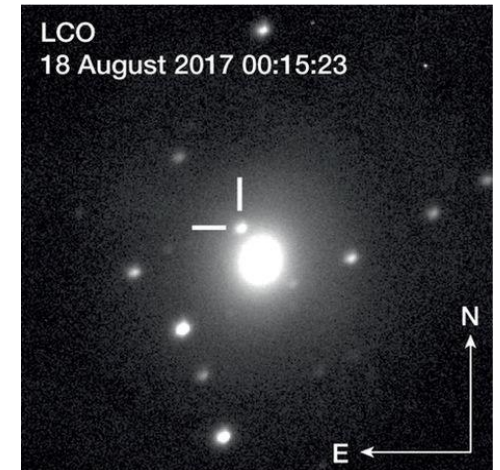
Multimessenger Astrophysics Science Analysis Group



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Inspiration

- August BNS merger discovery demonstrated power of MMA
 - Gamma-rays detected by *Fermi*
 - Gravitational waves detected by LIGO/Virgo
 - Flurry of follow-up observations by international astronomical community
 - What we learned:
 - BNS mergers occur in nature
 - Short GRB associated with at least fraction of BNS mergers
 - Kilonovae connected to BNS mergers
 - ...



- NASA observatories in 2020 decade and beyond will have an important role to play in future MMA observations, including:
 - those that continue to operate in the 2020s (*Hubble, Chandra, Swift, Fermi*)
 - those currently planned (JWST, WFIRST, Athena, LISA, and Explorers)
 - those that will be considered by the 2020 astrophysics decadal committee
- Many scientific communities within PCOS are now preparing for the 2020 decadal survey
- To support decadal prep., MMA SAG will analyze potential scientific benefits of MMA observations made possible by NASA observatories in 2020's and beyond
 - NASA observatories working in conjunction with each other or with other ground and/or space-based instruments

Goals of the MMA SAG

1. Identify science goals achieved by combining different messengers measured by current/future ground/space observatories
2. Identify current/future NASA observatories and concepts that could contribute to MMA in the 2020's to early 2030's
 - Could be drawn from large mission concepts studies, probe concepts under study, explorer concepts, planned intl. missions with NASA contributions
3. Determine how these science goals align with NASA Astrophysics scientific priorities
4. Identify key qualitative technical drivers needed to achieve these goals (e.g. wavelength, sensitivity, sky localization, latency, ...)
 - If feasible, determine desirable performance levels for each

What is the MMA SAG?

- Community-driven; community-owned
- MMA SAG will consist of astrophysicists from multiple (all?) disciplines within the PhysPAG
- We intend to invite the CoPAG to participate
- While inspired by GW BNS observation, MMA SAG is not necessarily GW-specific
- SAG is made up of anyone from the community who is interested
- Steering committee made up of one member from each participating community
 - e.g. GW, cosmic rays, Gamma Rays, X-Ray, ...
 - Will drive the science analysis, community involvement, white paper writing

Outcomes of the MMA SAG

- Timing of MMA SAG designed to be commensurate with 2020 decadal process
- Outcomes may enhance science cases for mission concepts under study or perhaps motivate new/modified concepts
- The SAG will document its findings in one or more publically available white papers
 - Delivered to APAC in time for consideration by the 2020 decadal survey
 - Should include implementable recommendations for decadal committee

What are the next steps?

1. SIG co-chairs to provide names of 2-3 possible SAG leaders to PhysPAG chairs
 - Name, position, institution, few sentences outlining selection rationale
2. SIGs to gather names now
 - AAS meeting is prime opportunity to talk about/with potential leaders
3. PhysPAG chairs will collect names before end of January and propose the SAG steering committee to the PhysPAG EC
 - Diversity (in a broad sense) will be a selection driver
4. PhysPAG (me) will present the MMA SAG charter to APAC in March for formal approval
5. Target: SAG kick-off meeting/presentation at April APS (Ohio)
6. SAG should span about one year