



The Multimessenger Science and Facilities Snowmass White Paper

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Goals of the white paper

- To provide an outlook of MM science for the next two decades.
- To provide a blueprint of a portfolio of facilities and experiments that will collectively realize the 20-year vision of MM science.

WP Philosophy

Key questions to be addressed:

1. What is the current status of the field?
2. What facilities and capabilities will we have or develop in the next decade and what kinds of MM science will be achievable with these capabilities?
3. What are the big questions that will require a new generation (~20+ years) of MM facilities?

A note about scope:

- Each messenger has at least one solicited Snowmass white paper; our focus is on science that is enabled by observations and detections in more than one messenger

Preliminary Outline

Executive Summary

1. Introduction

- a. Current Status of Multimessenger Science
- b. Multimessenger Science in the Next Two Decades (General Discussion)

2. Multimessenger Synergies in Particle Astrophysics

- a. Stellar Mass Compact Object Binaries
- b. Massive Compact Object Binaries
- c. Active Galactic Nuclei
- d. Tidal Disruption Events
- e. Other Transients
- f. Diffuse Backgrounds
- g. BSM/Tests of Fundamental Physics

3. The Current and Future Multimessenger Network

- a. The Current Landscape and Planned Enhancements
- b. The Multimessenger Vision
- c. Enabling Technologies
- d. Facilities
 - i. List of Facilities
 - ii. Complimentary b/w facilities

4. Data Management

- a. Real-time Alert Coordination
- b. Data Archiving
- c. Data Access
- d. Software

5. Conclusions

Timeline

1. Rough drafts of contributions: Jan. 15
2. Semi-final draft: Jan. 31
3. Final draft: Feb. 11
4. Contributed white paper deadline: Mar. 15