Data analysis challenges for multi-messenger astrophysics

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Goal: capture, compare and interpret different emissions from the same astrophysical sources

GOES-8 image produced by M. Jentoft-Nilsen, F. Hasler, D. Chesters (NASA/Goddard) and T. Nielsen (Univ. of Hawaii)

Needed: scalable cyberinfrastructure to support multi-messenger astrophysics

Efficient, robust, prompt signal searches and rapid interpretation

Detailed multi-messenger source modeling and interpretation of complementary data

Challenges: heterogeneous data and policies, dynamic collaborations, communication, real-time decision making, strategic scheduling (and coordination) of follow-up observations, …

Opportunities for computer / data science to enable deeper astrophysics inquiry

The SCiMMA project: identify key questions, gather input from stakeholders, leverage existing tools & practices through workshops, community white paper, strategic plan

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