

# All Sky Medium Energy Gamma-ray Observatory (AMEGO): Exploring the Extreme Multimessenger Universe

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The All sky Medium Energy Gamma-ray Observatory (AMEGO) is a probe class mission that will provide ground breaking new capabilities for multi-messenger astrophysics - identifying and studying the astrophysical objects that produce gravitational waves and neutrinos; along with a rich menu of additional science in astrophysical jets, compact objects, dark matter and nuclear line spectroscopy. AMEGO will cover the energy range from 200 keV to over 20 GeV, with more than an order of magnitude improvement in sensitivity relative to previous missions. AMEGO provides breakthrough capabilities in three areas of MeV astrophysics: nuclear line spectroscopy will provide new insight into the currently topical area of element formation in dynamic environments; polarization capabilities will uniquely probe conditions and processes in astrophysical jets and in the magnetospheres and winds of compact objects; a wide field of view and broad energy range provide outstanding capability in time domain and multi-messenger astrophysics with excellent synergies with observations at other wavelengths.

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