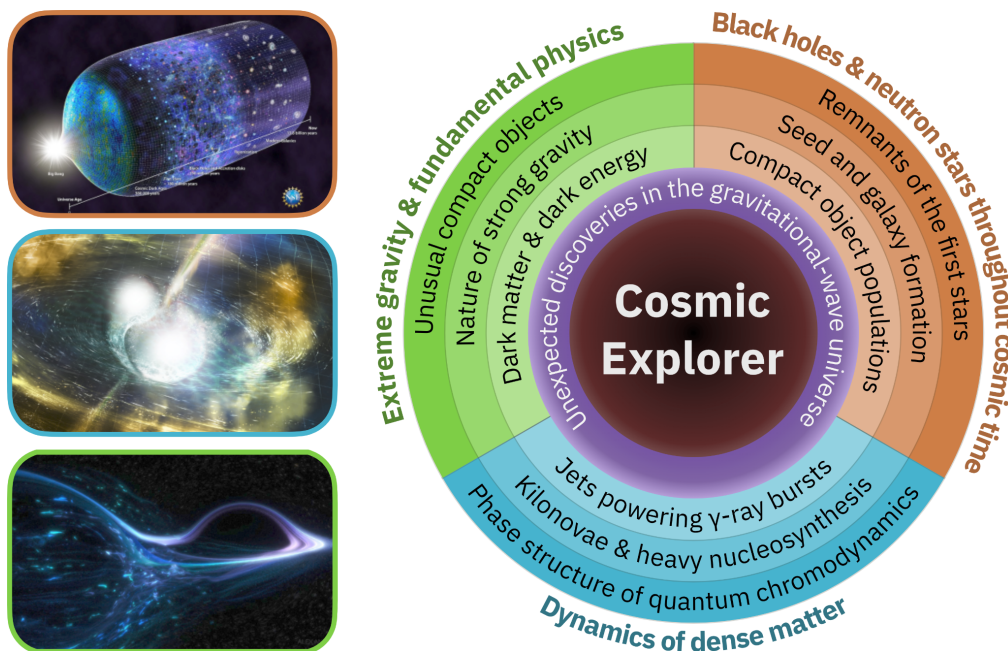


A Resounding Endorsement for Cosmic Explorer Gravitational Wave Observatory from the Astro2020 Decadal Survey

The National Academies' [2020 Decadal Survey on Astronomy and Astrophysics](#) resoundingly endorsed Cosmic Explorer, stating that a next-generation gravitational-wave observatory in the United States is "central to achieving the science vision laid out in the survey's roadmap." The survey further says "Gravitational wave astrophysics is one of the most exciting frontiers in science. One of the survey's key priorities is the opening of new windows on the dynamic universe, with gravitational wave detection at the forefront. The continued growth in sensitivity of current-generation facilities, such as LIGO, through phased upgrades and planning the next-generation observatory, such as Cosmic Explorer, is essential. This will require investment in technology development now. The survey committee strongly endorses gravitational wave observations as central to many crucial science objectives."

IGC member B.S. Sathyaprakash was a co-chair of the Science Team of the Gravitational Wave International Committee, charged to develop a vision for the next generation of ground-based gravitational wave detectors. Speaking about prospects for new discoveries



Central science themes and objectives that will be addressed by Cosmic Explorer. Cosmic Explorer's greatly increased sensitivity over today's detectors provides access to significantly more sources, spread out over cosmic time, as well as high-fidelity measurements of strong, nearby sources. Figure courtesy: A Horizon Study for Cosmic Explorer [2109.09882](#).

Sathyaprakash said "Cosmic Explorer will discover black hole collisions just one hundred million years after the Big Bang. This is the only way to probe how the Universe looked at

such earliest moments. Moreover, Cosmic Explorer will probe the deep interiors of neutron stars to help us understand the state of densest matter anywhere in the Universe and observe collisions of neutron stars to inform us where the Universe's heavy elements came from." The community White Papers ([1903.09277](#), [1903.09221](#), [1903.09277](#)) for the Decadal Survey and the Science Book ([2111.06990](#)) laid out the exciting science case for future gravitational wave detectors with contributions from hundreds of graduate students and postdoctoral fellows around the globe. Sathyaprakash and his students also collaborated with MIT, Syracuse, Fullerton and Caltech in a detailed study of the science capabilities of Cosmic Explorer. This NSF-funded Horizon Study ([2109.09882](#)) will pave the way in the planning of the project and in particular, the Conceptual Design study in the coming years.

Read more about the [2020 Decadal Survey](#)