Future Plan

1. Research Activities

- The current research focus on thermonuclear supernovae will be broadened to include other classes of supernovae, particularly core-collapse types such as Type Ib/c and Type II. This expansion aims to provide a more comprehensive understanding of stellar explosions across various progenitor systems.

- In addition to ongoing observational efforts, data from publicly available archives, such as ZTF, ASAS-SN, TNS, WISeREP, and others will be systematically collected to construct well-sampled multi-band light curves and spectra for statistical and comparative studies.

- The analyzed photometric and spectroscopic data will be interpreted through advanced modeling using computational tools and codes such as MCMC (Markov Chain Monte Carlo), SuperNova Explosion Code (SNEC), MOSFiT, TARDIS, and SYN++. These tools will be employed to extract key parameters including progenitor properties, explosion energy, and ejecta mass with improved accuracy.

- Ongoing collaborative research efforts will be strengthened through the inclusion of new research components and enhanced data-sharing. New collaborations will also be pursued specifically in X-ray studies of compact objects with IUCAA, Pune and ISRO-URSC, Bengaluru, and in supernova studies with ARIES, Nainital.

- Efforts will be made to secure external funding and infrastructure support through national agencies such as SERB-ANRF, to enhance the research and computational facilities of the Centre.

2. Academic Events

- Organize national-level workshops, seminars, guest lectures, and interactive sessions led by eminent scientists to foster a culture of research-oriented learning and scientific discussion.

- Facilitate specialized training programs and hands-on sessions to promote skill development in observational techniques, data analysis, and computational modeling among students and early-career researchers.

3. Astronomical Activities and Public Outreach

- Coordinate and host astronomy-based outreach programs aligned with significant celestial events, such as eclipses, meteor showers, planetary alignments, the phases of the Moon and its craters, Saturn’s rings, Jupiter’s moons, and the phases of Venus etc. These events aim to promote scientific curiosity and foster public interest in astronomy through direct skywatching experiences and interactive demonstrations.

- Conduct visits to nearby educational institutions to engage with students and faculty, highlighting opportunities in major astronomical mega-projects (e.g., TMT, LIGO-India, SKA, ASTROSAT, ADITYA-L1, XPo-Sat, DAKSHA etc). These initiatives aim to inspire and attract young minds towards careers in astronomy and astrophysics.