

Observational Signatures of Type Ia Supernova Progenitors III

5 – 9 February 2018 @Oort

Scientific Case and Motivation

Type Ia supernovae play a key part in forging the elements, shaping the interstellar medium, and accelerating cosmic rays, and have proven an invaluable tool for astronomers as standard candles. Over the course of this workshop series, great progress has been made in unveiling the origin of these thermonuclear stellar explosions. The challenge now before the community is no longer thought to be to identify a single progenitor model for type Ia supernovae, but to determine the relative contributions of differing progenitor populations, and reconstruct the prior evolution of individual supernovae from examination of their light curves, spectra, and environment. This workshop brought together observers working across the electromagnetic spectrum, and theorists studying supernova remnants, explosions, and presupernova evolution, fostering new collaborations and encouraging exchange of methods, discoveries, and constraints.

The Workshop

A total of 46 registered participants from 10 different countries participated in the workshop, in addition to the many members of the Dutch astronomical community who visited for portions of the week from the University of Amsterdam, Leiden Observatory, and Radboud University Nijmegen. Each morning of the meeting began with a series of review talks, summarising the present state of the art within a particular avenue for determining the progenitors of Type Ia supernovae. Central topics of the meeting included the growing success of explosion models, the search for companions and progenitor interaction with the surrounding environment (both at very early times and in remnants), clues from the rates of supernovae and the statistics of possible progenitors, binary evolution theory, and related objects. These introductions were followed after lunch by additional, typically shorter talks, and extended sessions wherein one or two major issues drawn from the day's topic were discussed in depth. Students and early career researchers were given the opportunity to present to the entire workshop, and encouraged to participate in the discussions.

Final Remarks

The third installment in this workshop series was once again a great success, and it is evident substantial progress has been made since the last meeting in our understanding of the viability of all progenitor models. A number of participants made it clear they believe this workshop series has played an important part in bringing this about, by bringing together theorists and observers within many subdisciplines in a focussed and collegial environment. We are extremely grateful for the funding and support provided by the Lorentz center, as well as NOVA, NWO, KNAW, and the Max Planck Society.

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