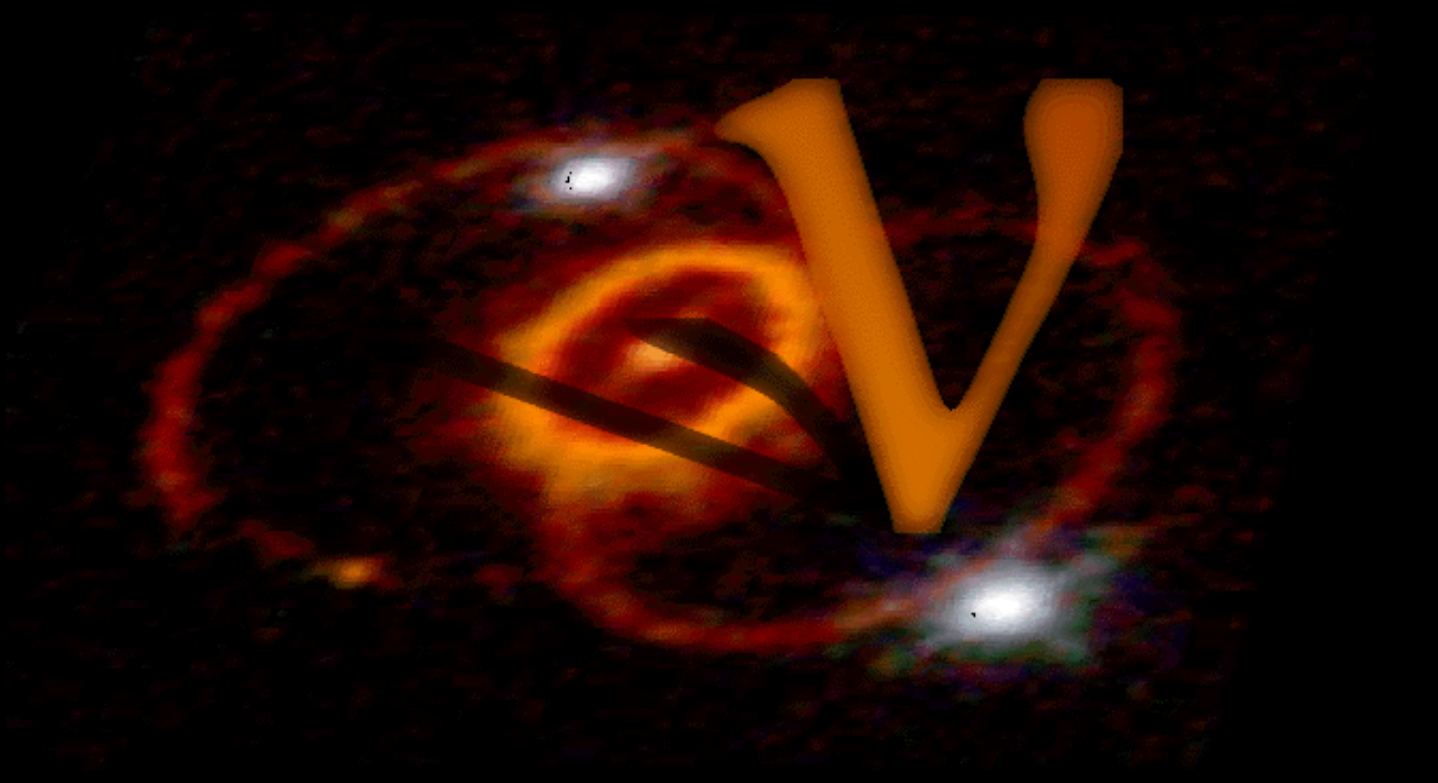
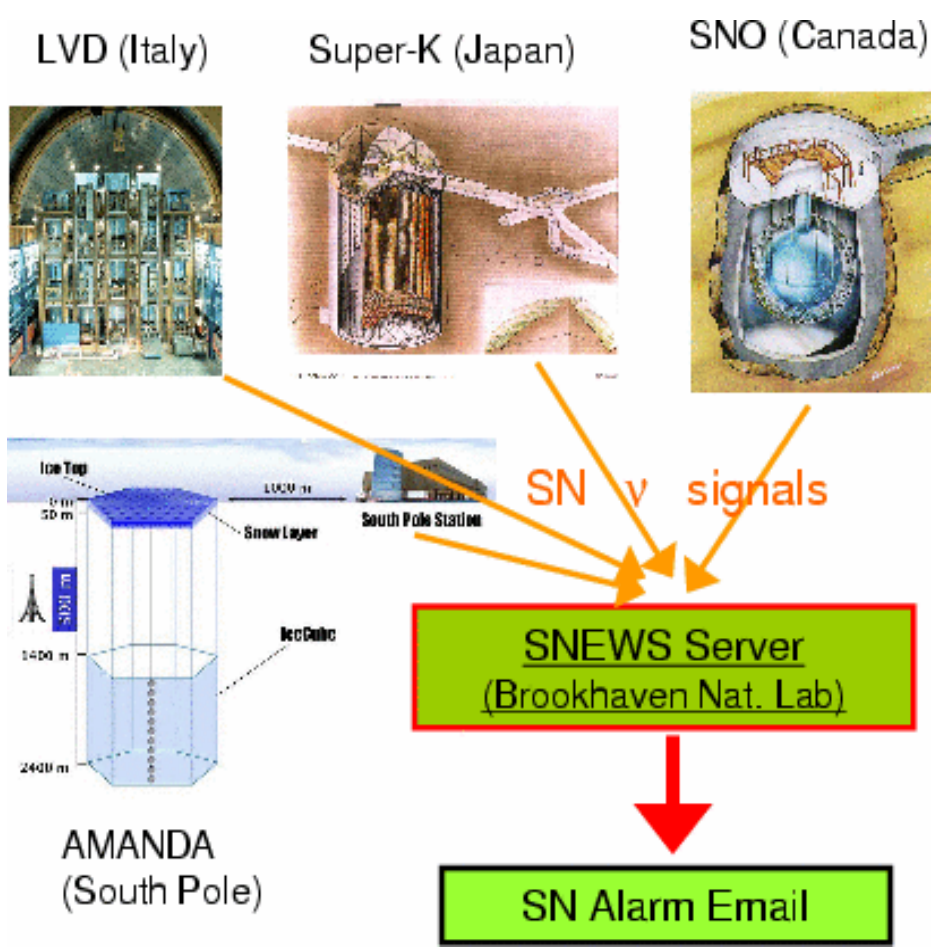
Are you ready for the next SUPERNOVA?



SNEWS: SuperNova Early Warning System

Amateur astronomers:
sign up for early alert email at

snews.bnl.gov



SNEWS is an alert network to provide advance warning of a supernova in our own galaxy. SNEWS receives input from the neutrino experiments around the world, and will use this information to alert observers that light from a nearby supernova will be arriving at Earth within the next few hours, allowing for rapid observations of such a rare and spectacular event.

A supernova caused by the collapse of the core of a massive star is one of the brightest events in the universe. The light from such an explosion is not seen until the resulting shock wave breaks out of the star's surface. However, the massive blast of neutrinos created by the core collapse escapes from the star immediately, preceding the light by hours or even days.

Neutrinos are fundamental particles related to electrons. Unlike electrons, neutrinos are electrically neutral and only interact weakly with matter. While this inherent slipperiness is what allows them escape from the exploding star so rapidly, it also makes them very hard to detect, requiring massive detectors located deep underground to shelter the subtle neutrino signal from the constant rain of cosmic rays at the surface of the Earth. Four of these experiments send possible supernova neutrino alerts to the SNEWS network: Super-Kamiokande in Japan; the Sudbury Neutrino Observatory (SNO) in Ontario; the Large Volume Detector (LVD) in Italy; and the Antarctic Muon and Neutrino Detector Array (AMANDA). The burst of neutrinos from a supernova somewhere in our galaxy would create many neutrino interactions in these detectors. Supernovae in other galaxies are too far away to be seen in neutrinos, but one in our galaxy would be both a spectacular event and a great chance to study such an event up close. One such supernova should occur in our galaxy every few decades, although none in the Milky Way have been observed optically since Kepler in 1604.

Each participating experiment sends potential supernova neutrino bursts to the SNEWS computer (hosted by Brookhaven National Lab.) A real supernova will be seen in multiple experiments at the same time, while any instrumental noise or other false alarms in a single detector will not be propagated.

This scheme allows rapid and automated distribution of the early warning to observers, including amateurs, who can use the advance warning to prepare to observe the impending light show from the earliest possible time.
Some pointing information may be available. More information on the network, including links to the participating experiments and a form to sign up to receive a future supernova alerts by email, can be found at **snews.bnl.gov.**

SNEWS is supported by NSF Collaborative Research grants PHY-0303196 and PHY-0302166