

SN 1948B progenitor mass from integral field spectroscopy of the environment

K15b

Hanindyo Kuncarayakti (IoA, U.Tokyo), Mamoru Doi (IoA, U.Tokyo), Greg Aldering (LBNL), Nobuo Arimoto (NAOJ), Keiichi Maeda (IPMU, U. Tokyo)

We have obtained integral field spectroscopy of the type-IIP SN 1948B explosion site using the SuperNova Integral Field Spectrograph (SNIFS) mounted at the University of Hawaii 2.2m telescope. Across the $6'' \times 6''$ field of view SNIFS spectra cover 3300–10000Å, with resolution $\lambda/\Delta\lambda \sim 2000$ and spatial sampling of $0.4''$. The SNIFS data shows that SN 1948B is situated in the outskirts of an extended source near an HII region. We assume that this source is a star cluster which hosted the progenitor of SN 1948B and by comparing the observed SED of the cluster with simple stellar population models, we found that the age of the cluster is around 13 Myr. This implies that the progenitor was most likely to be a $\sim 17M_{\odot}$ star, whose lifetime would correspond to the 13 Myr age of the host cluster. This result is consistent with the currently accepted upper limit on type-IIP SNe progenitor mass of $\sim 16.5M_{\odot}$. Further work on other supernova environments is currently in progress, in order to constrain the mass of the progenitors and their association with nearby star clusters/HII regions.