

# The 1st IReNA-Ukakuren Joint Workshop “Advancing Professional Development in Nuclear Astrophysics and Beyond”

Contribution ID: 40

Type: **Invited talk**

## Heavy Element Nucleosynthesis in the Multi-Messenger Era

*Thursday, 31 August 2023 09:30 (40 minutes)*

Neutron star mergers (NSMs) have been confirmed as one of the production sites of the heaviest elements. Studying post-NSM signals in the electromagnetic spectrum is invaluable for understanding the production of these elements, especially with the LIGO Scientific Collaboration having begun its next observing run. However, with the current low detection rates of post-merger light curves, we invoke a different kind of resource for observational data: metal-poor stars. Long after merger, metal-poor stars can host in their spectra signatures of the historical events that produced the heavy elements, which can in turn be used as additional sources to study ancient NSM sites. This talk will discuss the overlap between observations of metal-poor stars and NSM signals and how their joint study can help constrain the cosmic evolution of the elements and the fundamental nature of dense matter.

**Primary author:** HOLMBECK, Erika (Observatories of the Carnegie Institution for Science)

**Presenter:** HOLMBECK, Erika (Observatories of the Carnegie Institution for Science)

**Session Classification:** Multi-Messenger Astronomy and Astrophysics