



Contribution ID: 98

Type: **Invited**

# Heavy Element Nucleosynthesis from the Birth of Black Holes

*Tuesday, 6 September 2022 16:00 (30 minutes)*

The astrophysical origin of the rapid neutron capture (r-process) remains an outstanding mystery in nuclear astrophysics. I will review our evolving understanding of potential r-process sites, particularly those associated with the merger of binary neutron stars and the core collapse of massive rotating stars. I will describe how these diverse channels are directly probed by the thermal kilonova or r-process-enriched supernova emission which follows these events, highlighting also the connection with the gravitational wave emission detected by LIGO/Virgo. Time permitting, I will describe a new type of stellar explosion - a “super-kilonova” - produced by the birth of the most massive spinning black holes, which may be discovered following gamma-ray bursts or by future infrared observations with the Roman Space Telescope.

## Field of work

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**Session Classification:** Tuesday - Session 4