UNIVERSITÄT LEIPZIG

Fakultät für Physik und Geowissenschaften

Prof. Dr. J. Deiglmayr
Prof. Dr. J. Vollmer

Physics Colloquium

Tuesday, 15 November 2022 at 17:00

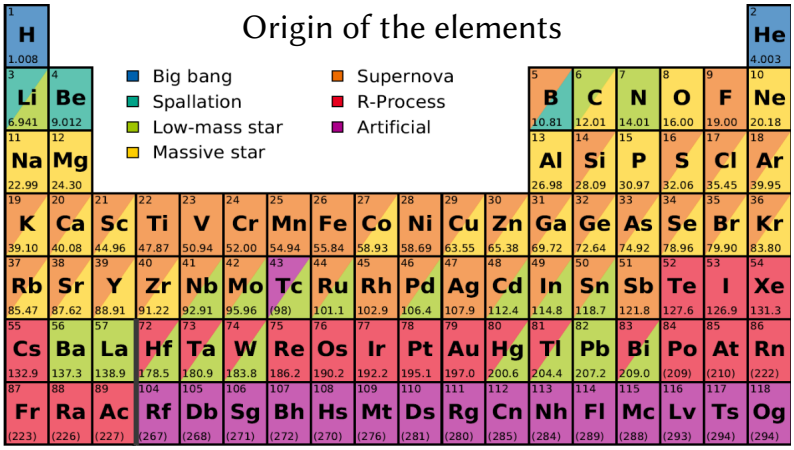
Prof. Dr. Friedrich-Karl Thielemann

University of Basel and GSI Helmholtz Center for Heavy Ion Research

The Cosmic Origin of the Elements

What is the origin of the oxygen which we breath, the hydrogen and oxygen in form of water in rivers and oceans, the carbon in all organic compounds, the silicon in electronic hardware, the calcium in our bones, the iron in steel, silver and gold in jewels, the rare earths utilized, *e.g.*, in magnets or lasers, lead or lithium in batteries, and also of naturally occurring uranium and plutonium?

The answer lies in the skies. Astrophysical environments from the big bang to stars and stellar explosions are the cauldrons where all these elements are made. The understanding of the nucleosynthesis processes responsible for their production combine nuclear physics input and environment conditions like temperature and density, astrophysical models of the early universe as well as stars and stellar explosions in single and binary stellar systems, like core-collapse supernovae, black hole formation and hypernovae, novae, X-ray bursts, type Ia supernovae, neutron star and neutron-star—black-hole mergers.



As a function of galactic evolution time these events determine the composition of the evolving interstellar medium, requiring progress in this quite interdisciplinary field from nuclear physics to astronomical observations.

Online lecture via Zoom (Meeting-ID: 628 6512 9158, passcode: 466827)
https://uni-leipzig.zoom.us/j/62865129158?d=bzRxWjhXOU51R0hUZjVzZDNENGhQUT09