Contribution ID: **23** Type: **Oral Talk**

Effective lifetime of potential waiting-point ^{68}Se in rp-process

Sunday, 8 September 2024 17:40 (15 minutes)

Effective lifetime of a nuclide is the key parameter that can quantitatively estimate the degree of passing this nuclide in rp-process.
The mass of neutron-deficient isotope ^{70}Kr, which has been directly measured by using $B\rho$-defined isochronous mass spectrometry, allows us to re-evaluate the effective stellar half-life of the potential waiting point ^{68}Se in rp-process under typical type-I x-ray bursts conditions.
With the more accurate mass data of ^{70}Kr, the effective stellar half-life of ^{68}Se at both low (typically below 1.5-2 GK) and high (above 1.5-2 GK) temperatures are calculated.
The results show that ^{68}Se would not be a strong waiting point since its effective lifetime shorter than typical burst time scale of 10-100 s at low temperature, while poses a considerable delay at high temperature where the photodisintegration of ^{70}Kr can not be negligible in rp-process.

Primary authors: Dr ZHANG, Min (Institute of Modern Physics, CAS); XU, Xing (Institute of Modern Physics, CAS)

Presenter: XU, Xing (Institute of Modern Physics, CAS)

Session Classification: Nuclear Data for Astrophysics and Related Topics

Track Classification: Nuclear Data for Astrophysics and Related Topics