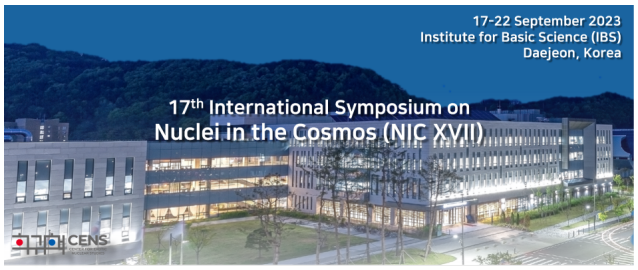

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The s process - nuclear physics aspects

Monday, 18 September 2023 11:15 (30 minutes)

About half of the elements heavier than iron are produced in rather quite stellar environments during long exposures of seed material with neutrons. The interplay between neutron captures and beta-decays enables the production of all elements between iron and bismuth. This process is called slow neutron capture process, or s process.

Radioactive isotopes on the s-process path can act as branch points. The anaylsis of the branching ratios allows conclusions about the stellar conditions during the process. However, it requires the knowledge of the corresponding reaction rates as a function of the environmental parameters. The most important reacions are neutron captures and beta-decay rates.

I will present the basic ideas of the s process nucleosysnthesis, discuss the latest developments constraining the reaction rates and give an outlook towards possible future developments.

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