



# <sup>140</sup>Ce(n,g) paper



## Why Cerium?

Cerium is mostly produced via **s-process**, the final abundance of <sup>140</sup>Ce (89% of natural cerium) predicted by stellar models strongly depends on its destruction channel <sup>140</sup>Ce( $n,\gamma$ ).

Small cross section (magic number of neutrons), the MACS (Maxwellian average cross section) is determined by resonances in keV region.



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Stellar models (from Sergio Cristallo and Diego Vescovi), the Ce abundance always decreases (it was already lower than what is observed experimentally), as it is reasonable with an higher MACS at T < 30 keV.



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The higher Ce destruction rate may have a strong impact on the neutron density, therefore on the s-process branching point and on the isotopic abundances of many elements.



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1) Introduzione e motivazioni

- 2) Detector setup (già presente nel paper di Universe, estremamente sintetico)
- 3) Parametri finali delle risonanze, parametri medi e MACS
- 4) Effetti sull'abbondanza del Ce e sulla densità neutronica



