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Neutron capture processes at work in stars: a nuclear astrophysics boot camp

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The production of heavy elements in stars by neutron-capture processes still present many open puzzles that need to be solved. In these last years, the previous established scenario where the abundance signature beyond iron is dominated only by a combination of s-process and r-process has been questioned by a number of observations in stars at different metallicities, in presolar grains and in the abundance distribution of the solar system. Nuclear astrophysics plays a crucial role in moving forward our knowledge in this field of research. I will discuss few examples from observations, exploring the zoo of different stellar neutron-capture processes like the s-process, the i-process, the n-process and the r-process.

Primary author: Dr PIGNATARI, marco (University of Hull)

Presenter: Dr PIGNATARI, marco (University of Hull)

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