α-elastic scattering in inverse kinematics for the astrophysical p-process

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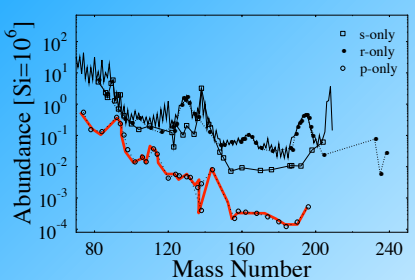

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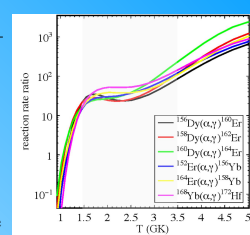

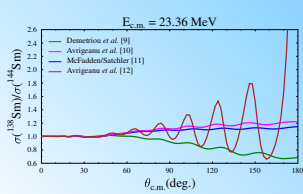

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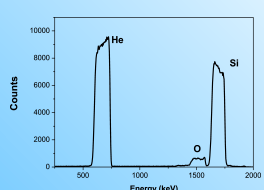

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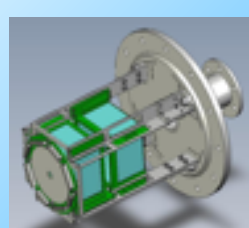

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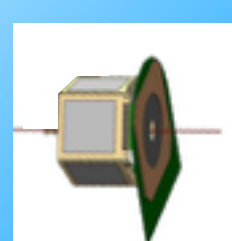

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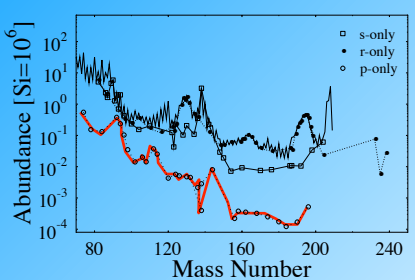

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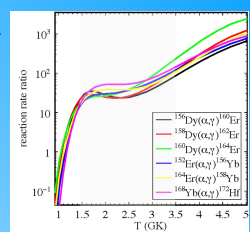

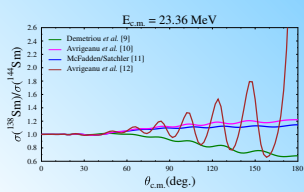

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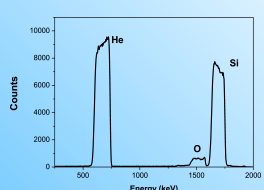

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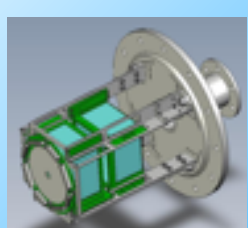

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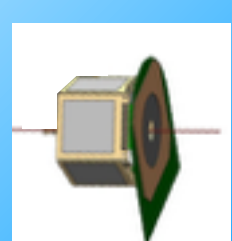

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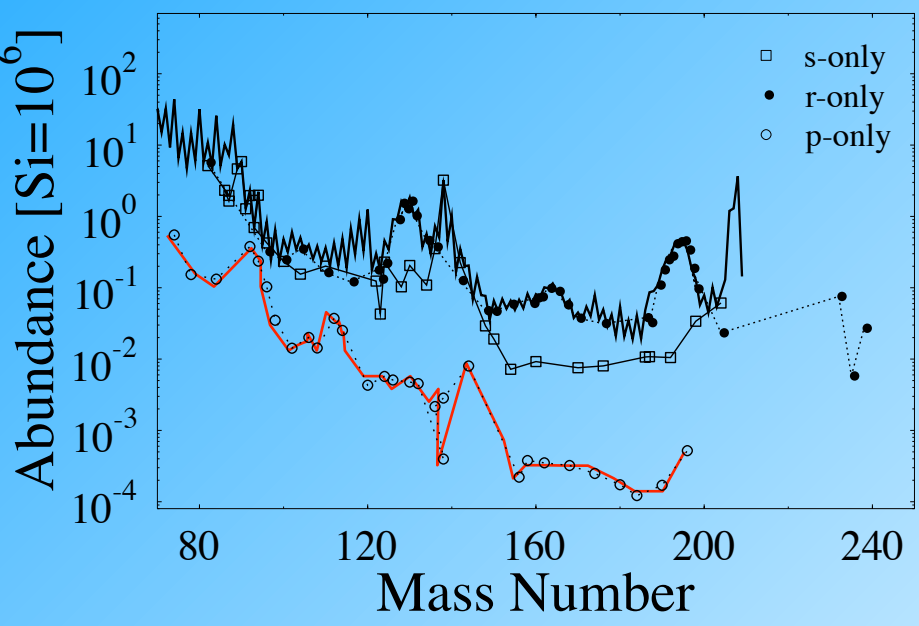

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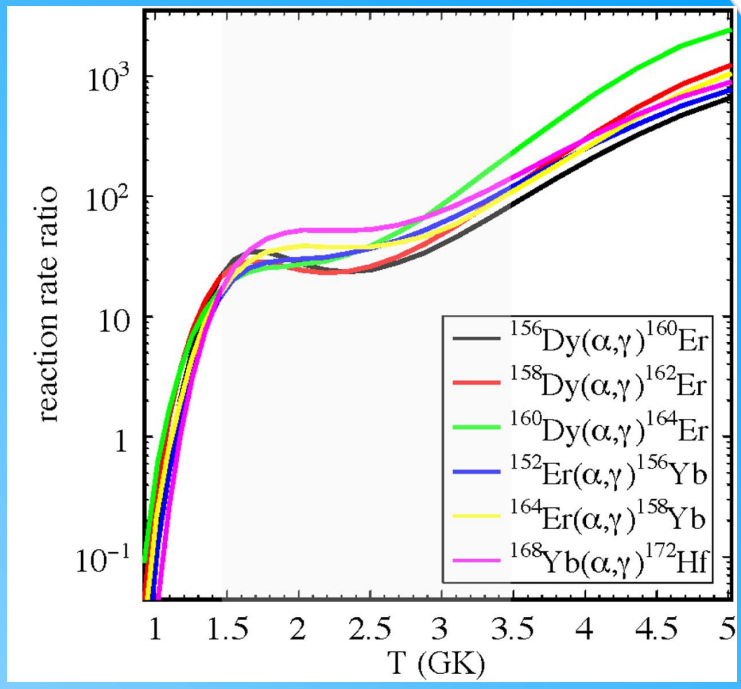

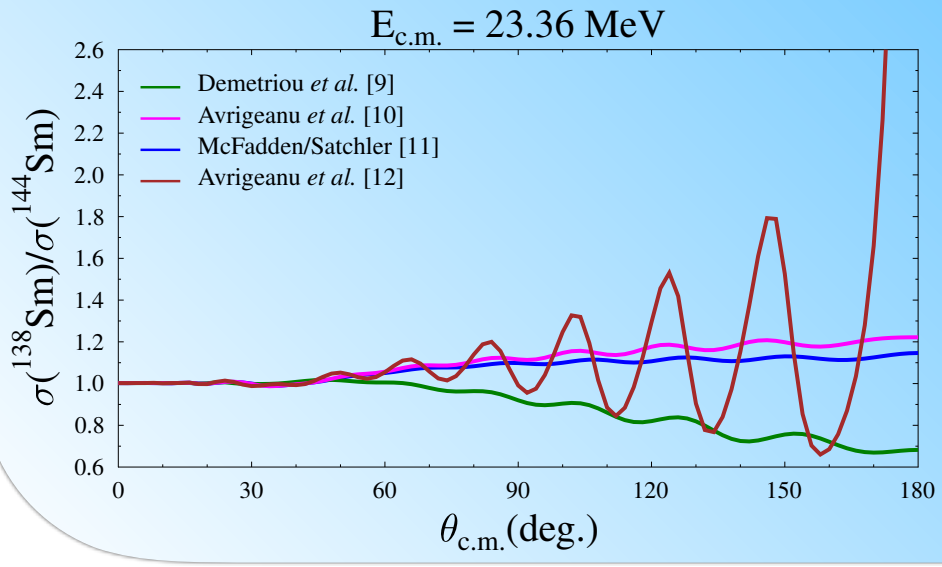

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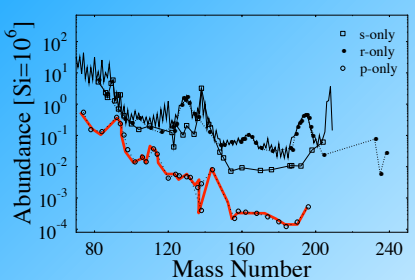

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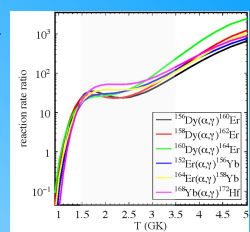

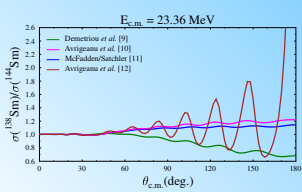

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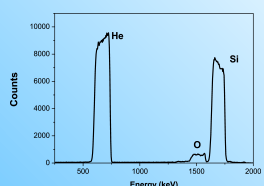

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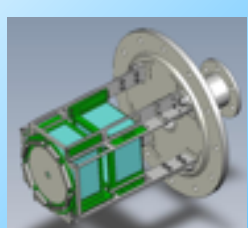

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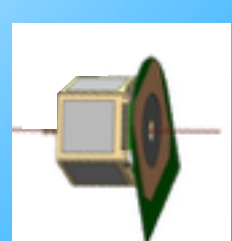

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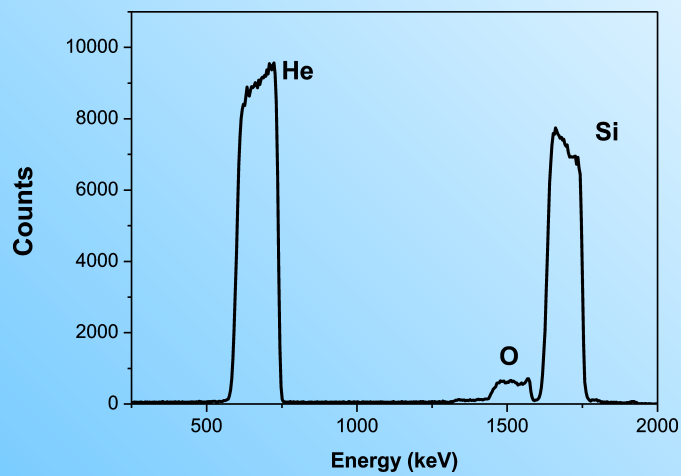

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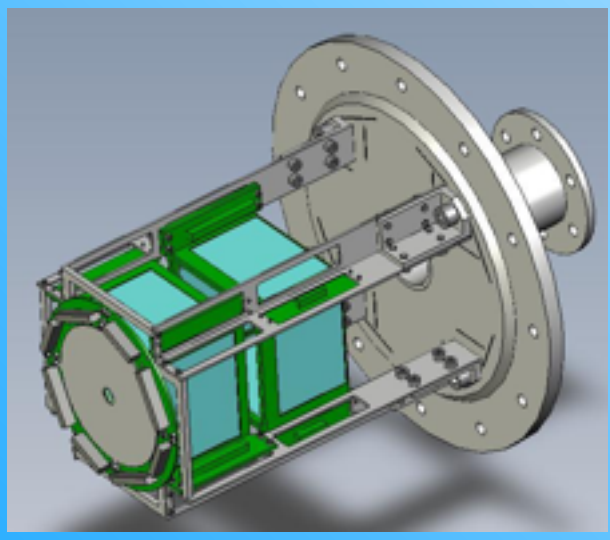

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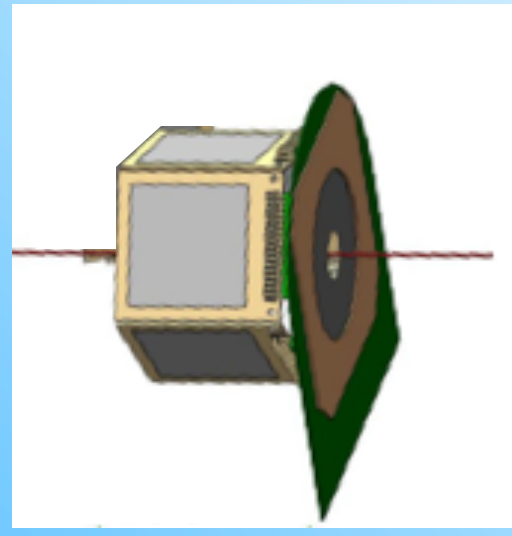

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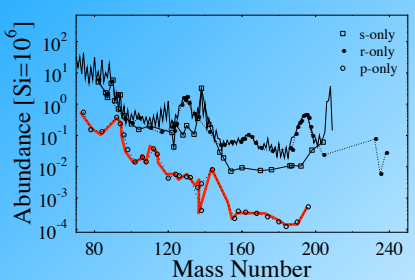
p-nuclei

The bulk of the heavy nuclei are produced via neutron capture reactions in the *s*- and the *r*-process [1, 2]. Additional neutron capture process like the *i*-process [3] also significantly contribute to the synthesis of nuclei heavier than iron.



However, there is a small number of nuclei ranging from **^{74}Se** till **^{196}Hg**, which cannot be produced by these neutron capture processes due to the presence of stable isomer nuclei with lower atomic number. The production of the so-called ***p-nuclei*** is mostly thought to happen via the *p*-process [4] (sometimes described as γ-process [5]) in the O/Ne layer of Supernovae Type II explosions reaching temperatures in the order of T_9 = 1.5 - 3.5.

α-nuclear potentials

Several sensitivity studies [5, 6, 7, 8] have been performed in order to identify the uncertainties caused by the nuclear input in p-process reaction networks. All studies indicated a strong dependence of the final abundance distribution of the heavy p-isotopes on the α-nuclear potential.

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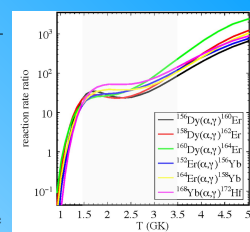

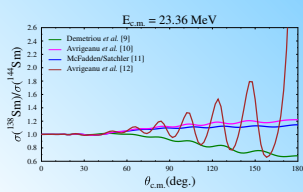

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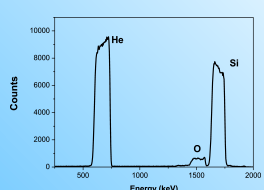

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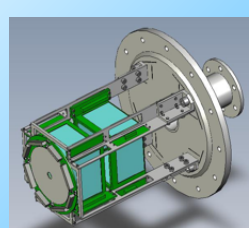

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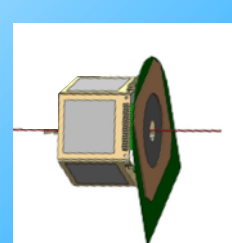

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