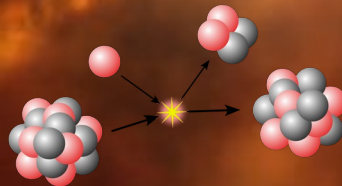
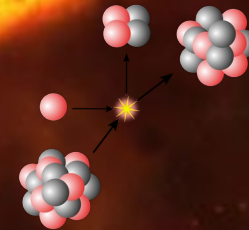
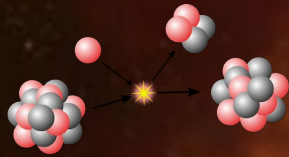


The Role of the r-process in Shaping the Milky Way's History

David Aguado

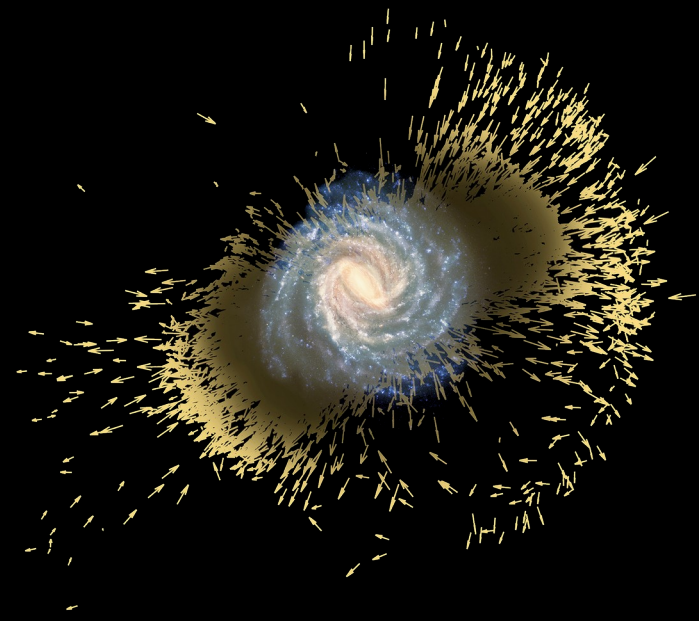
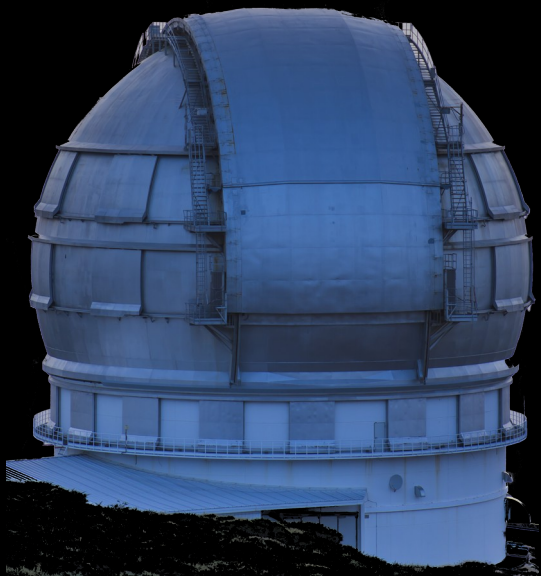
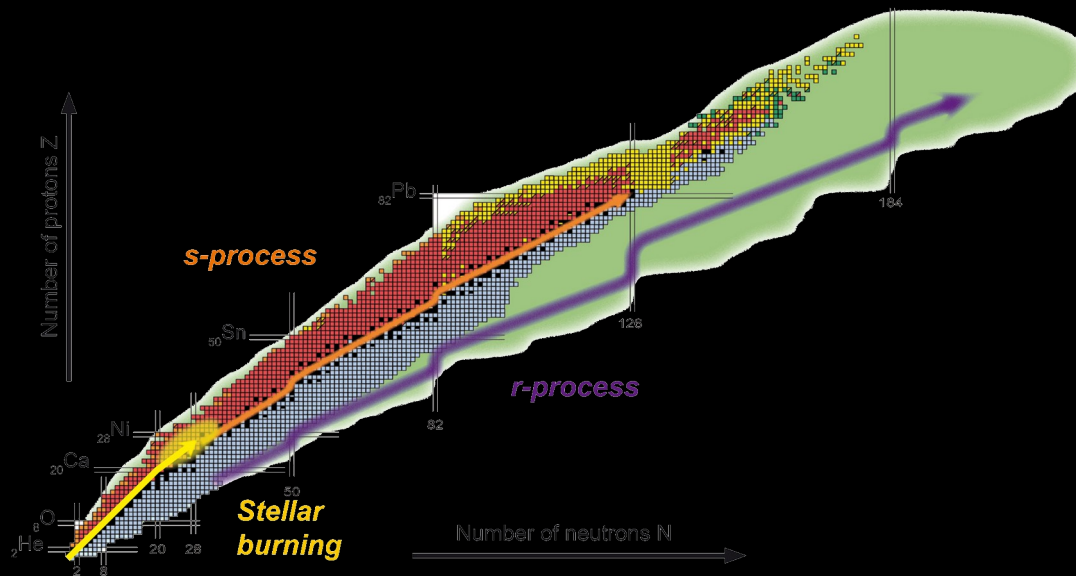


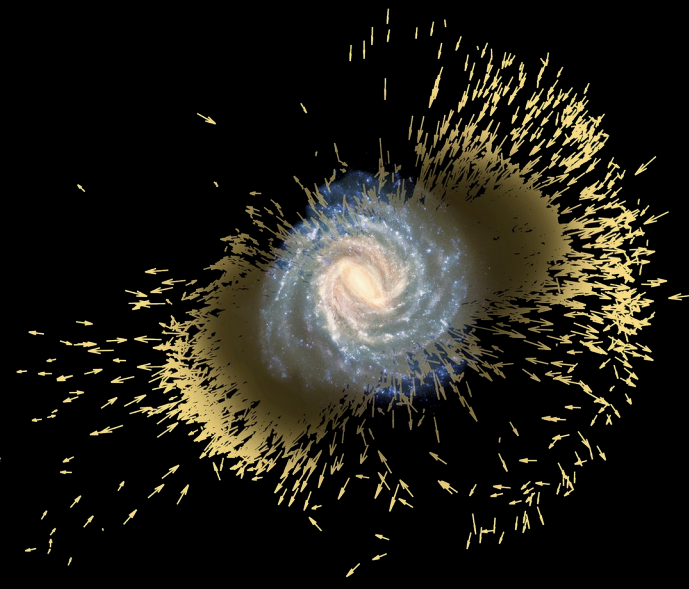
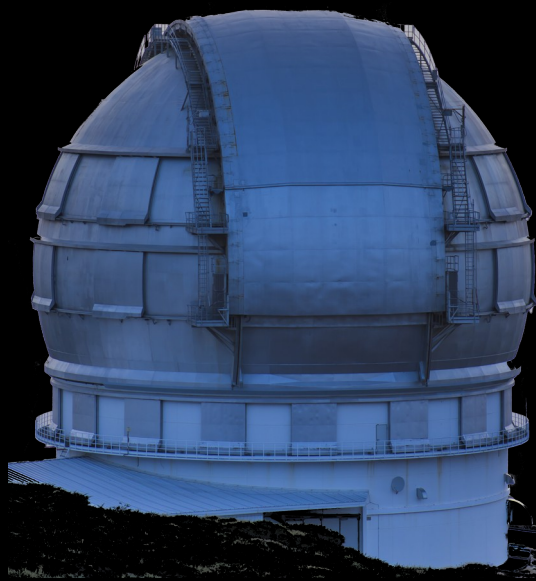
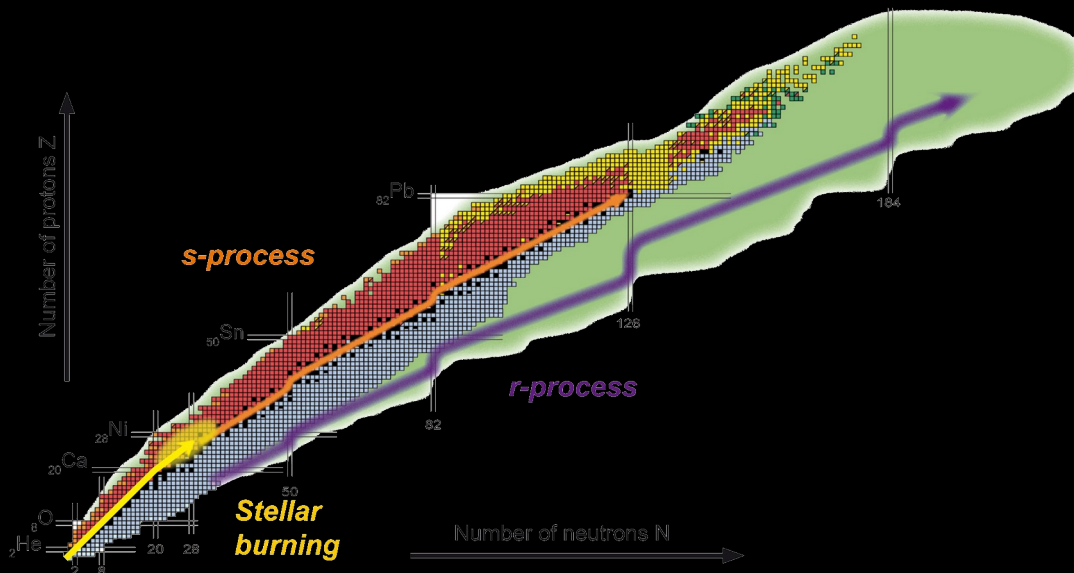
The Milky Way Assembly Tale

20240527



Unión Europea
Fondo Europeo
de desarrollo Regional
"Una manera de hacer Europa"





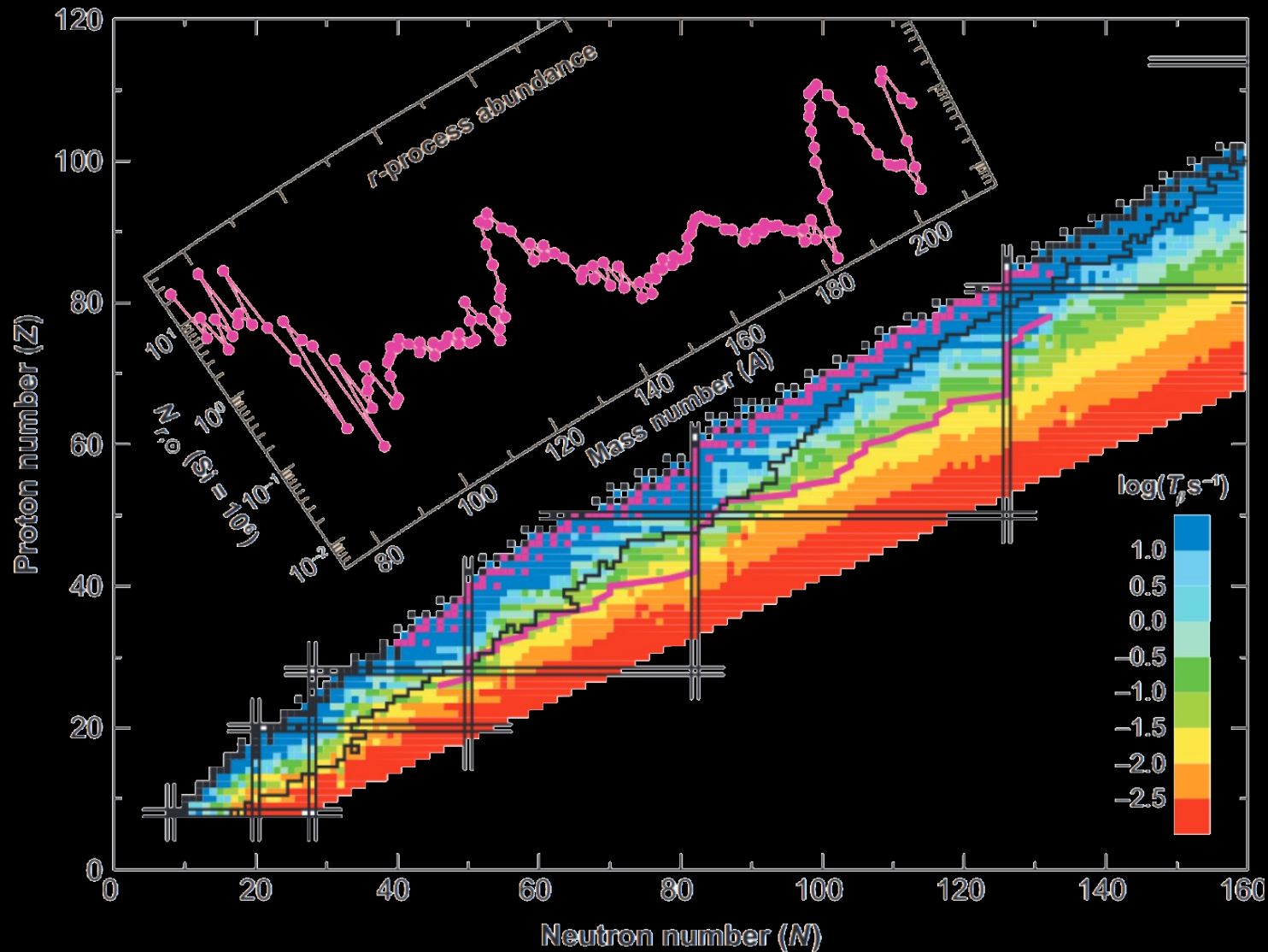
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The rapid neutron-capture process



The site of r-process

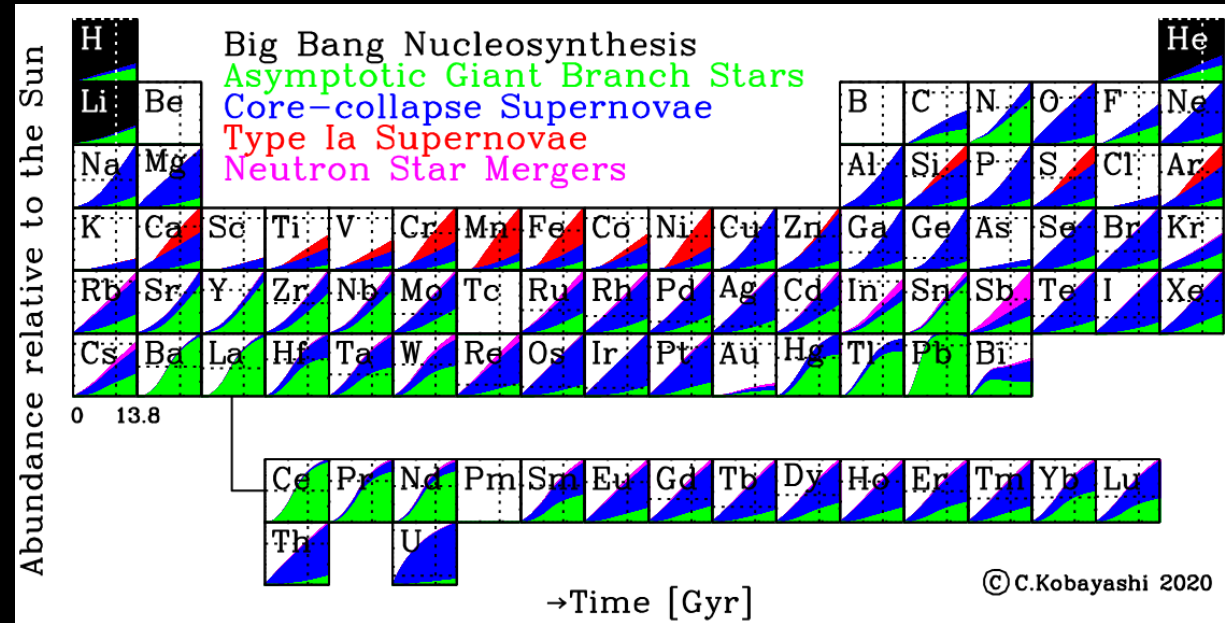
Core-collapse SN

Quian et al. 2000, Argast et al. 2004

Kobayashi et al. 2020

Spitzer Space Telescope

Neutron star mergers



r-process (Os, Ir, Pt) → (Sm, Eu, Gd + Th, U)

Tanvir et al 2013

European Space Agency

The site of r-process

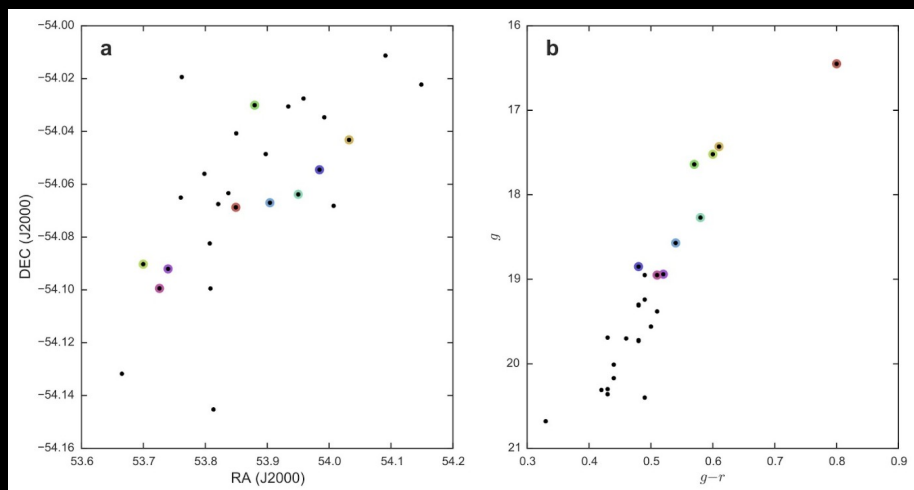


Dark Energy Survey/Fermilab

The site of r-process



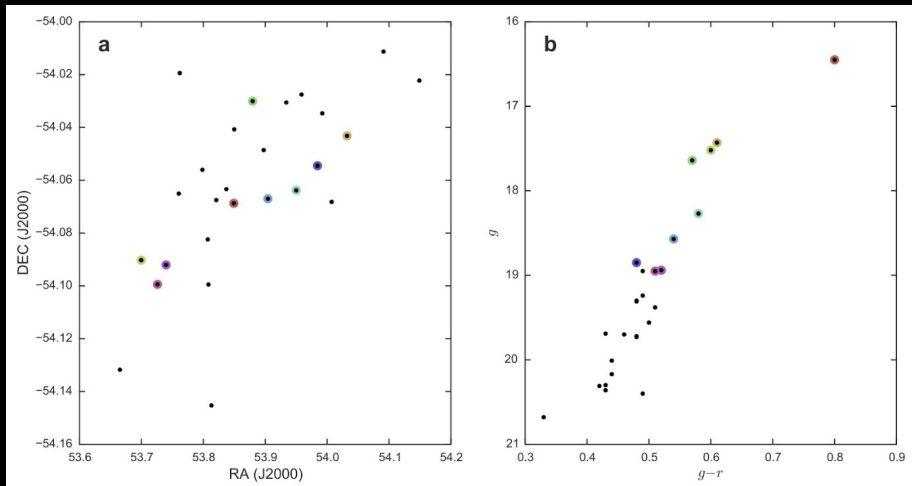
Dark Energy Survey/Fermilab



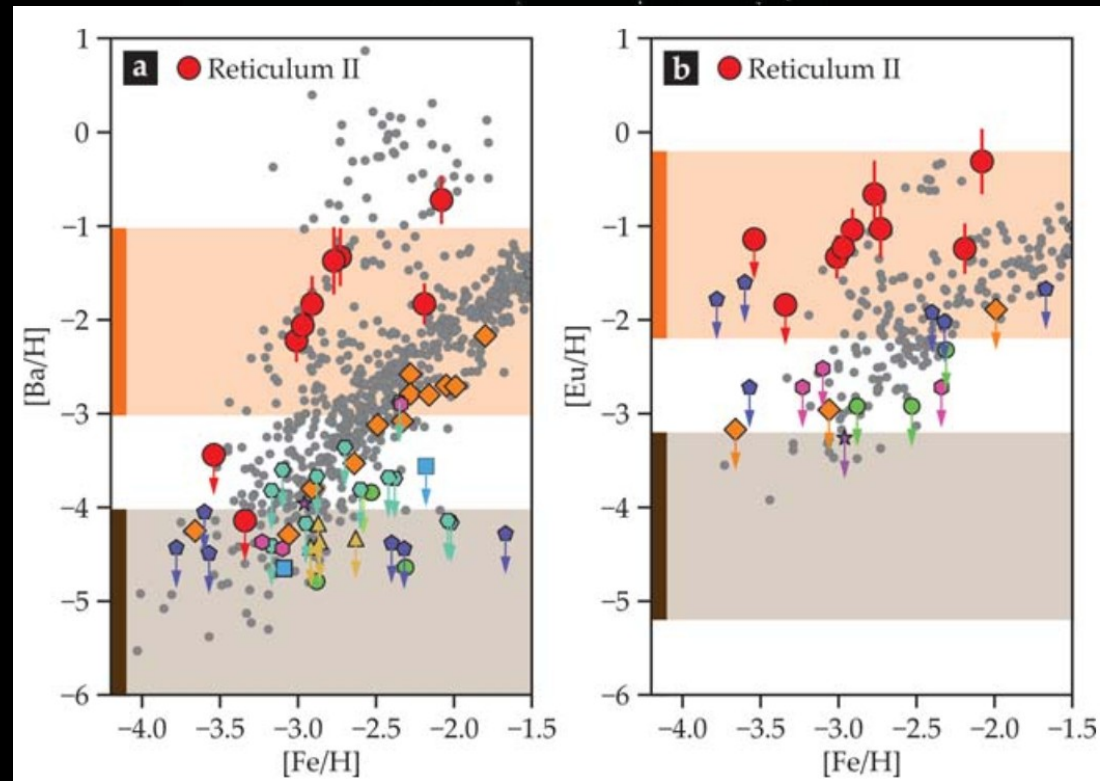
Ji et al. 2016

The site of r-process

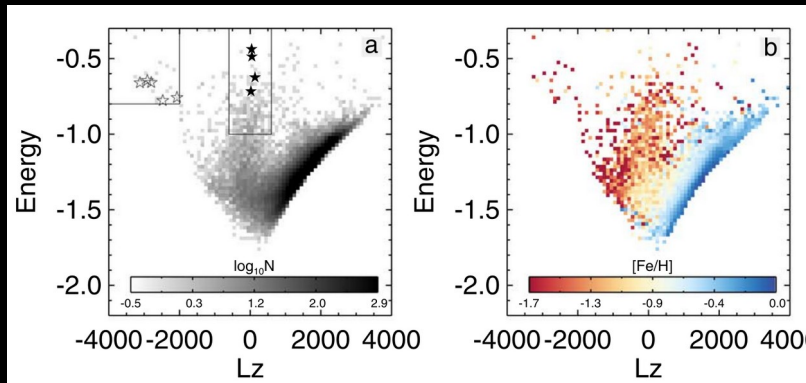
Dark Energy Survey/Fermilab



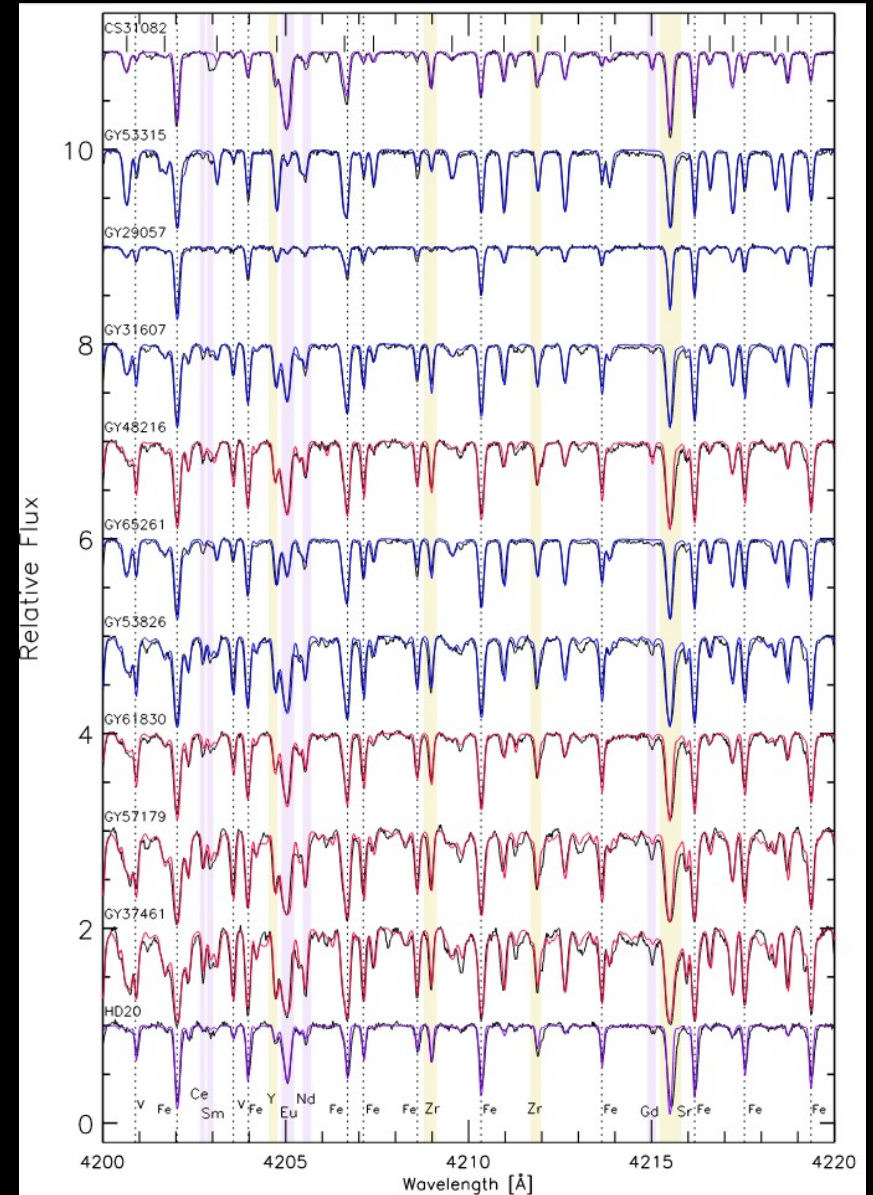
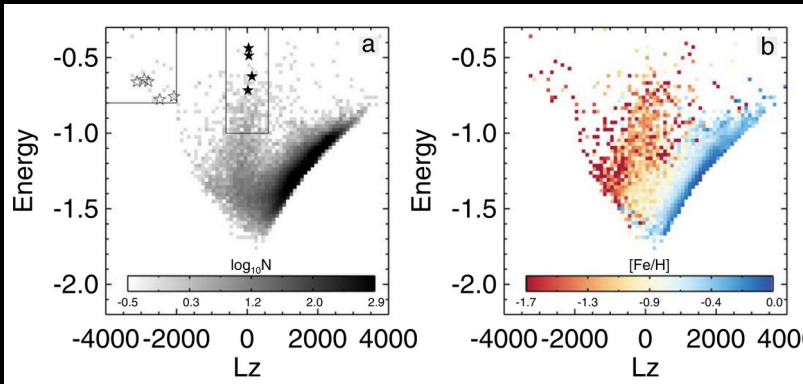
Ji et al. 2016



r-process and ex-situ population

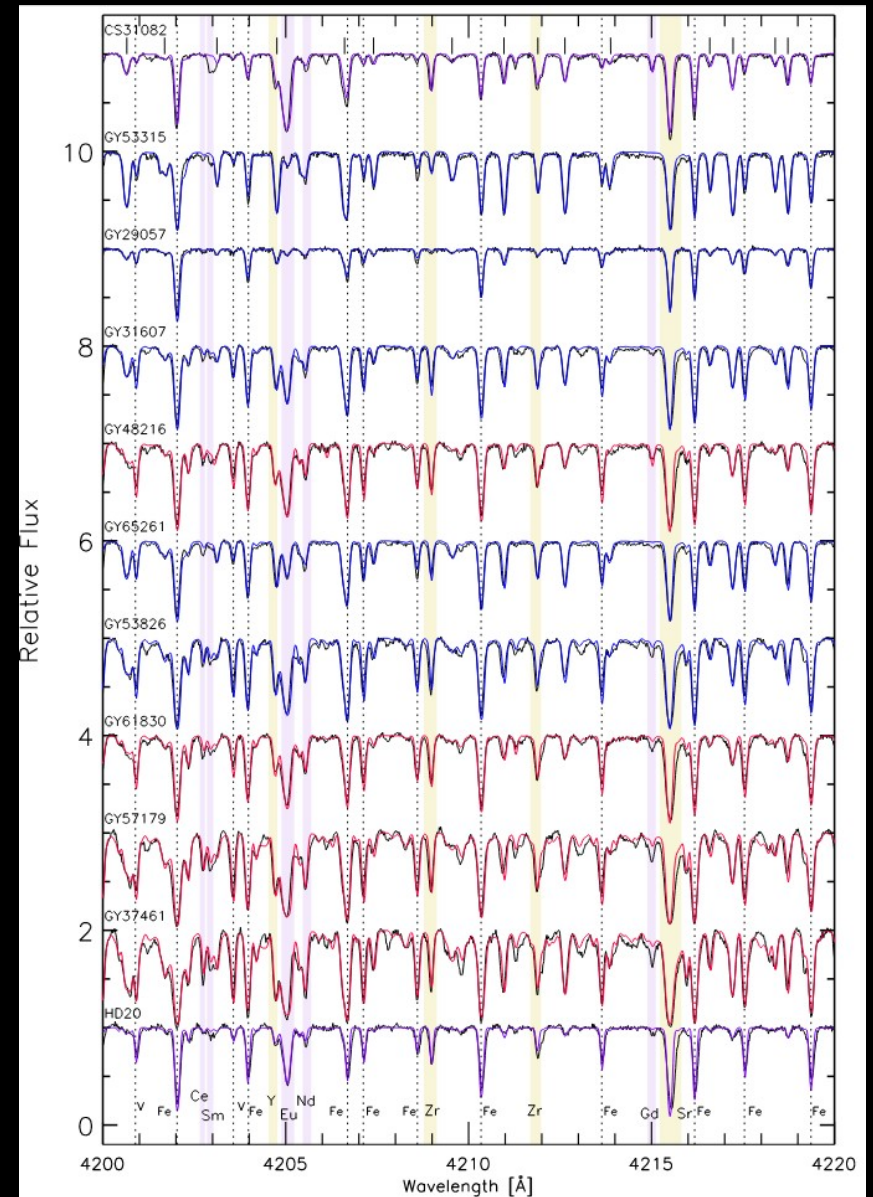
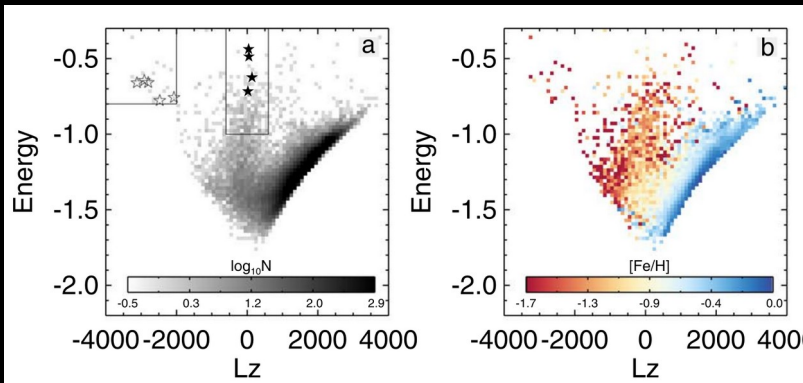


r-process and ex-situ population



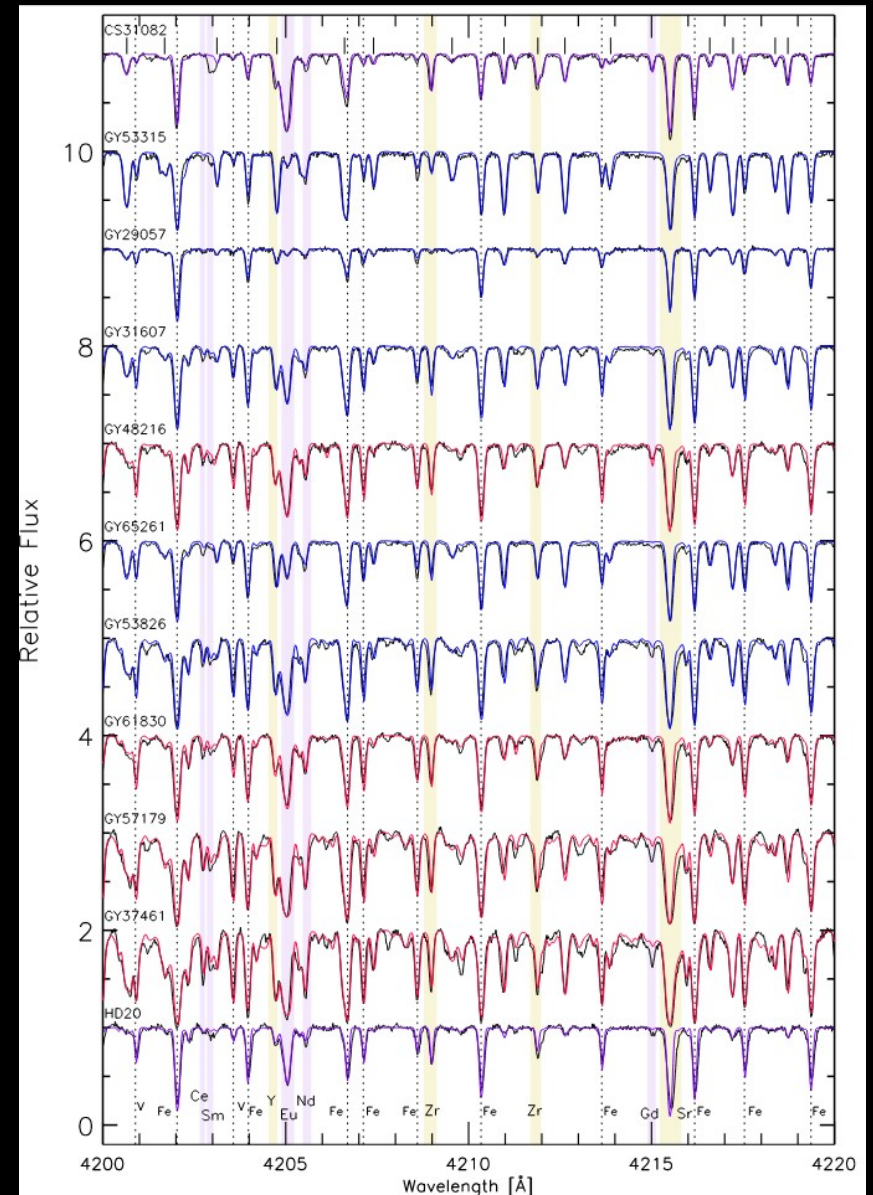
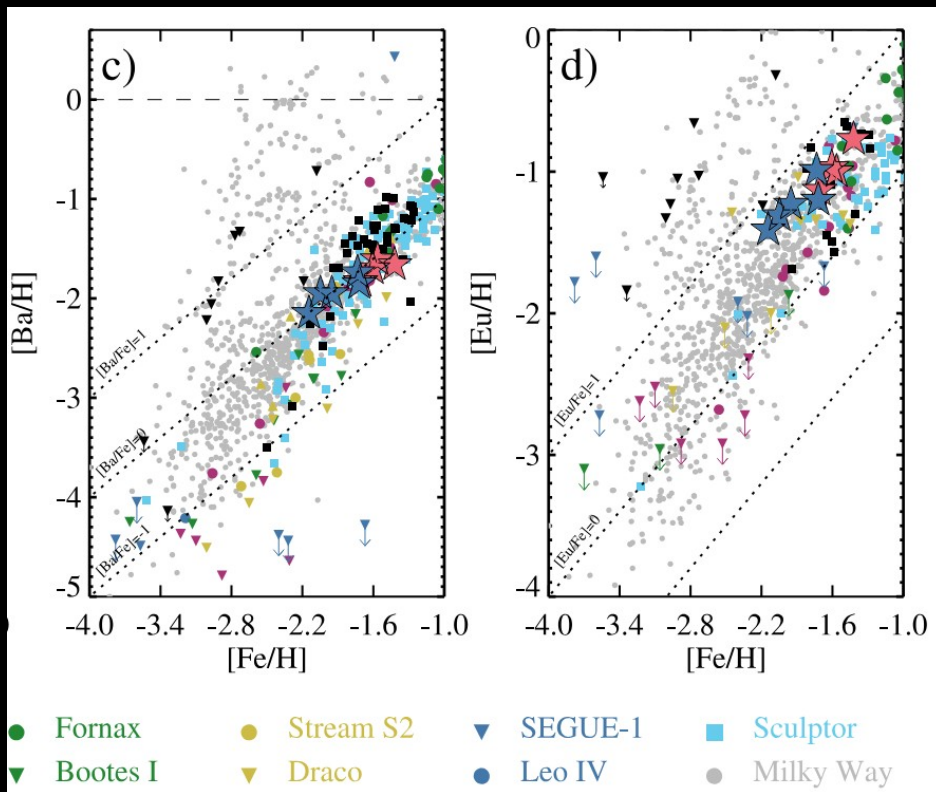
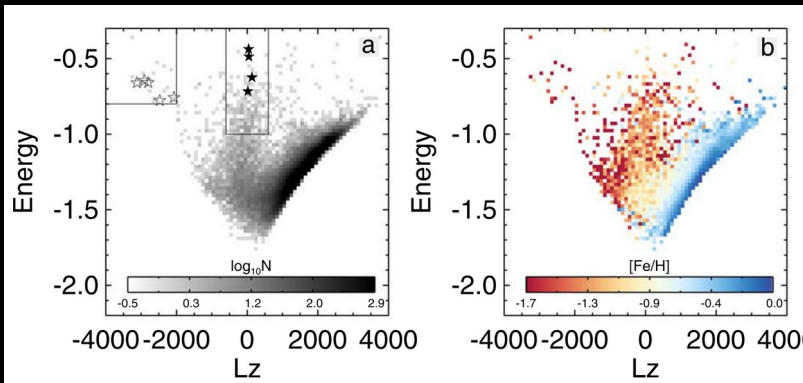
DA, Belokurov, Myeong et al. 2021

r-process and ex-situ population

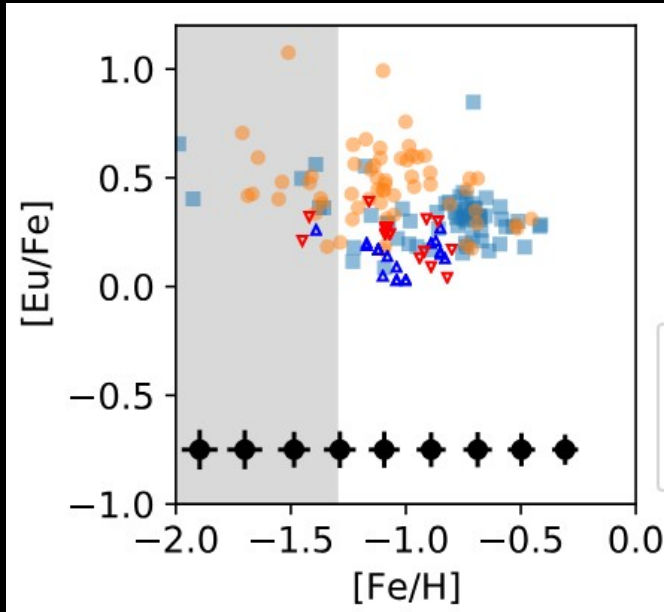


DA, Belokurov, Myeong et al. 2021

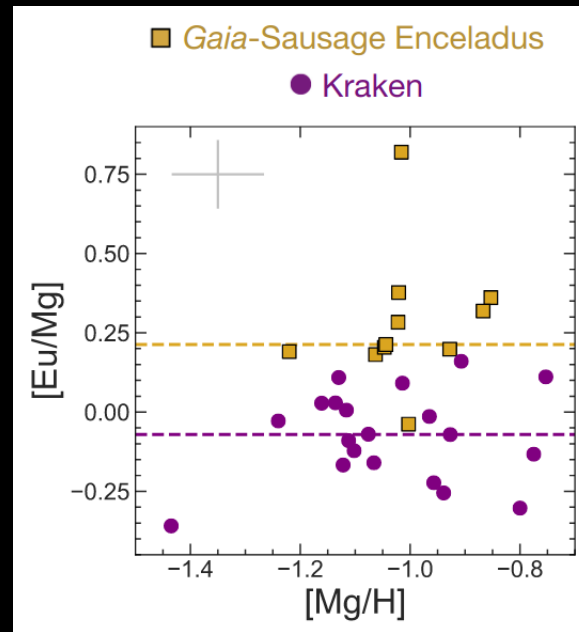
r-process and ex-situ population



r-process and ex-situ population

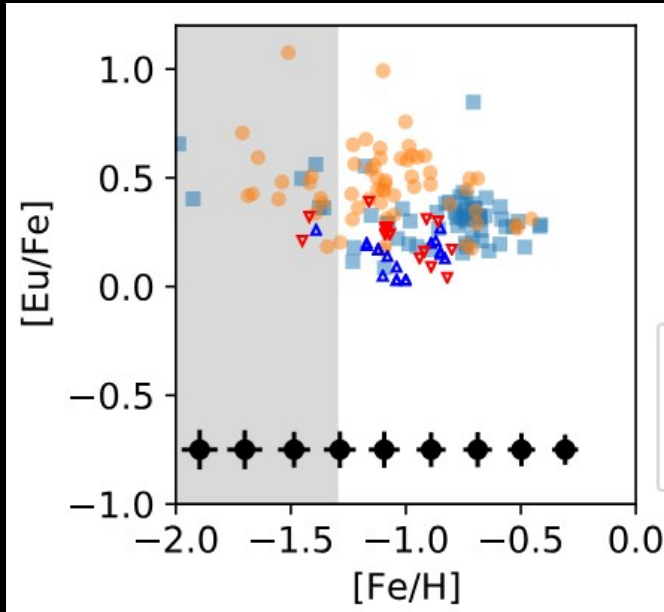


Matsuno et al. 2021

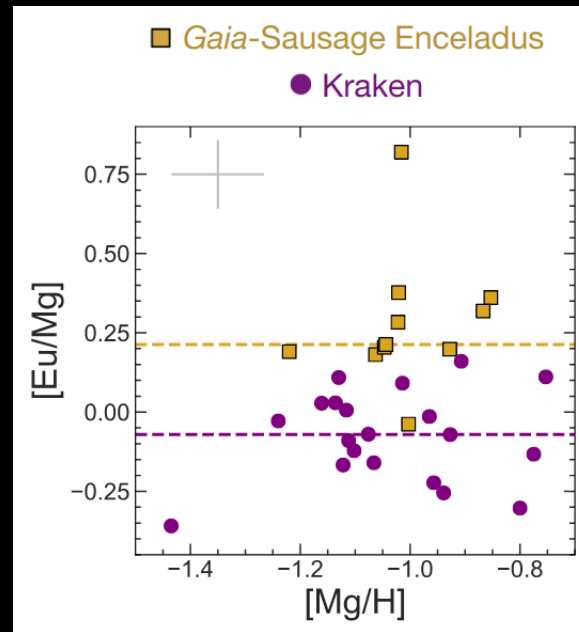


Naidu et al. 2022

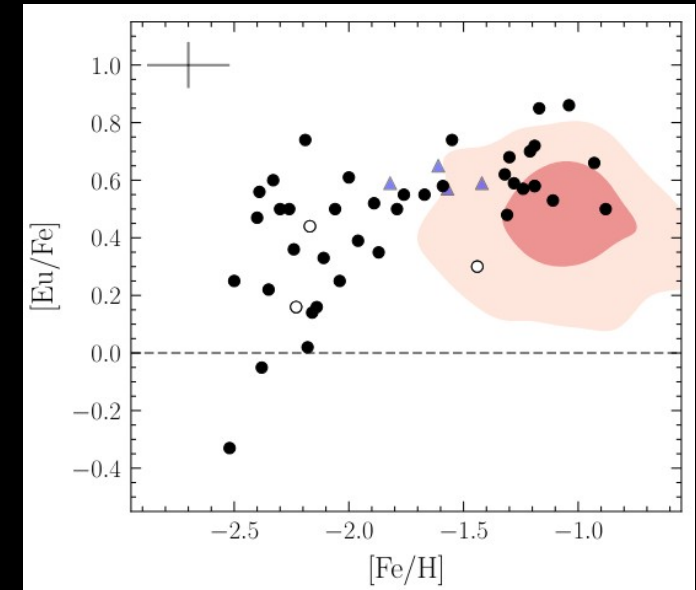
r-process and ex-situ population



Matsuno et al. 2021

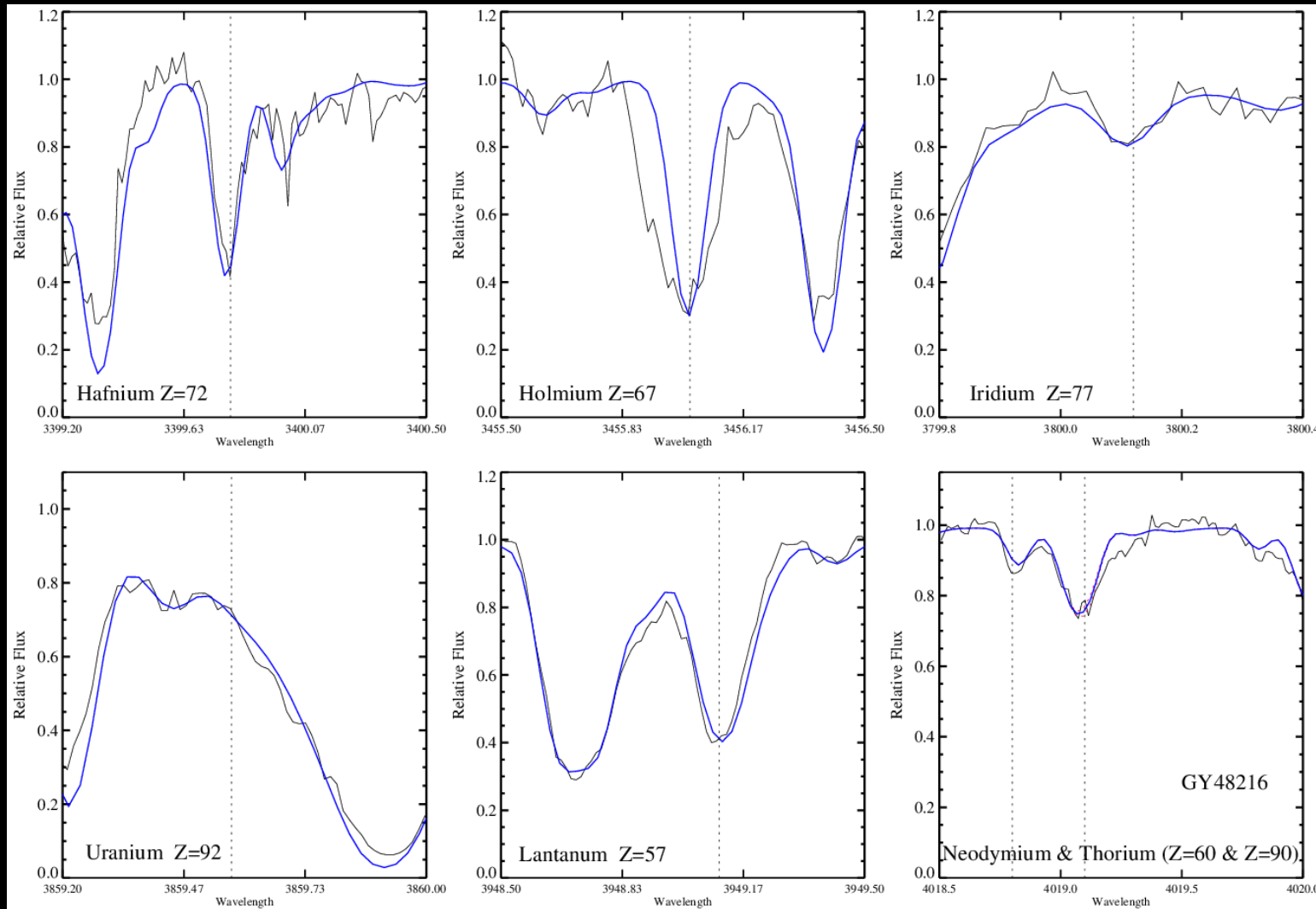


Naidu et al. 2022



Xiaowei et al. 2024

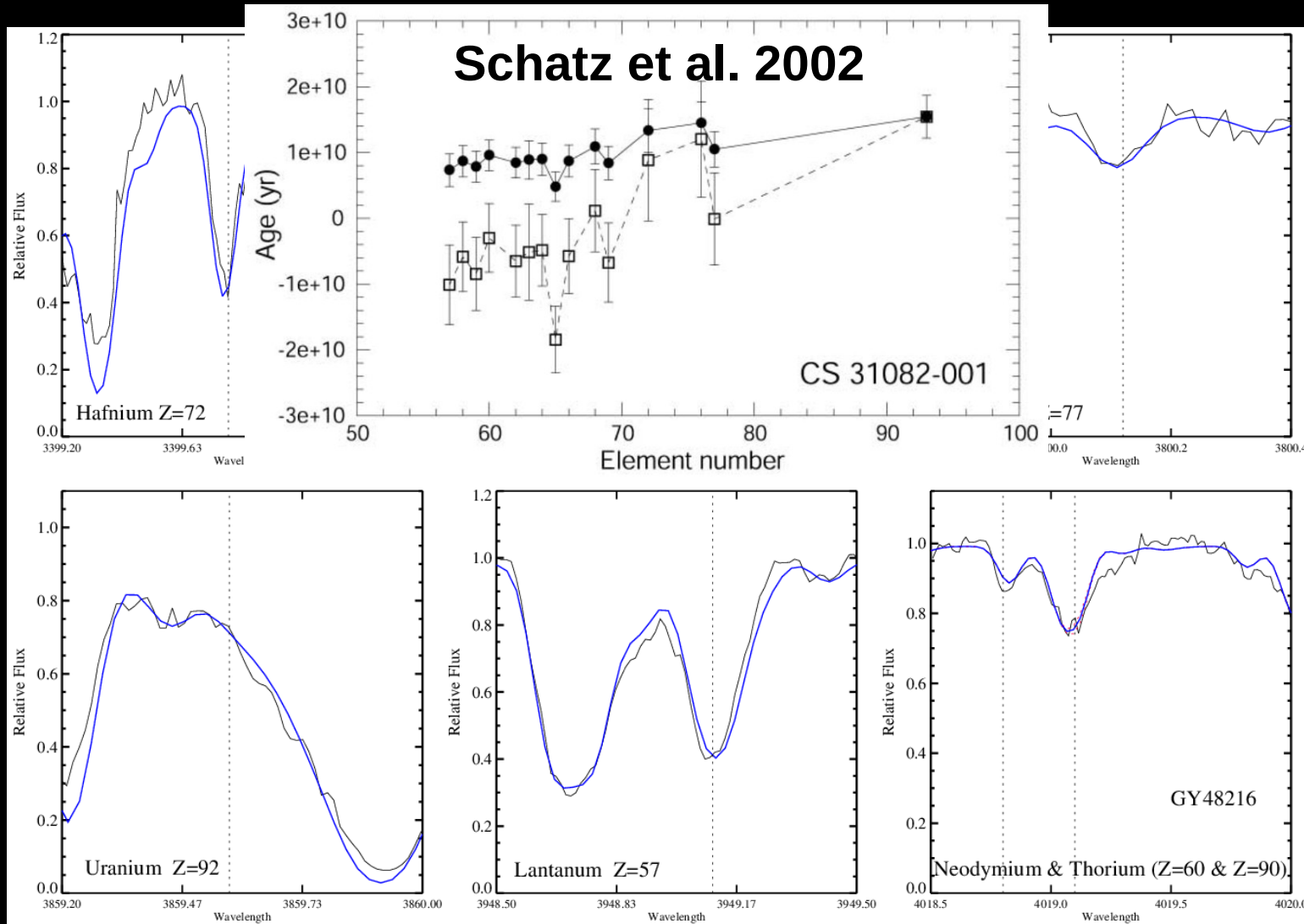
Radioactive cosmochronology with the r-process



In prep.

Mol, RuI, RhI, HoII, ErII, TmII, YbII, LuII, HfII, OsI, IrI

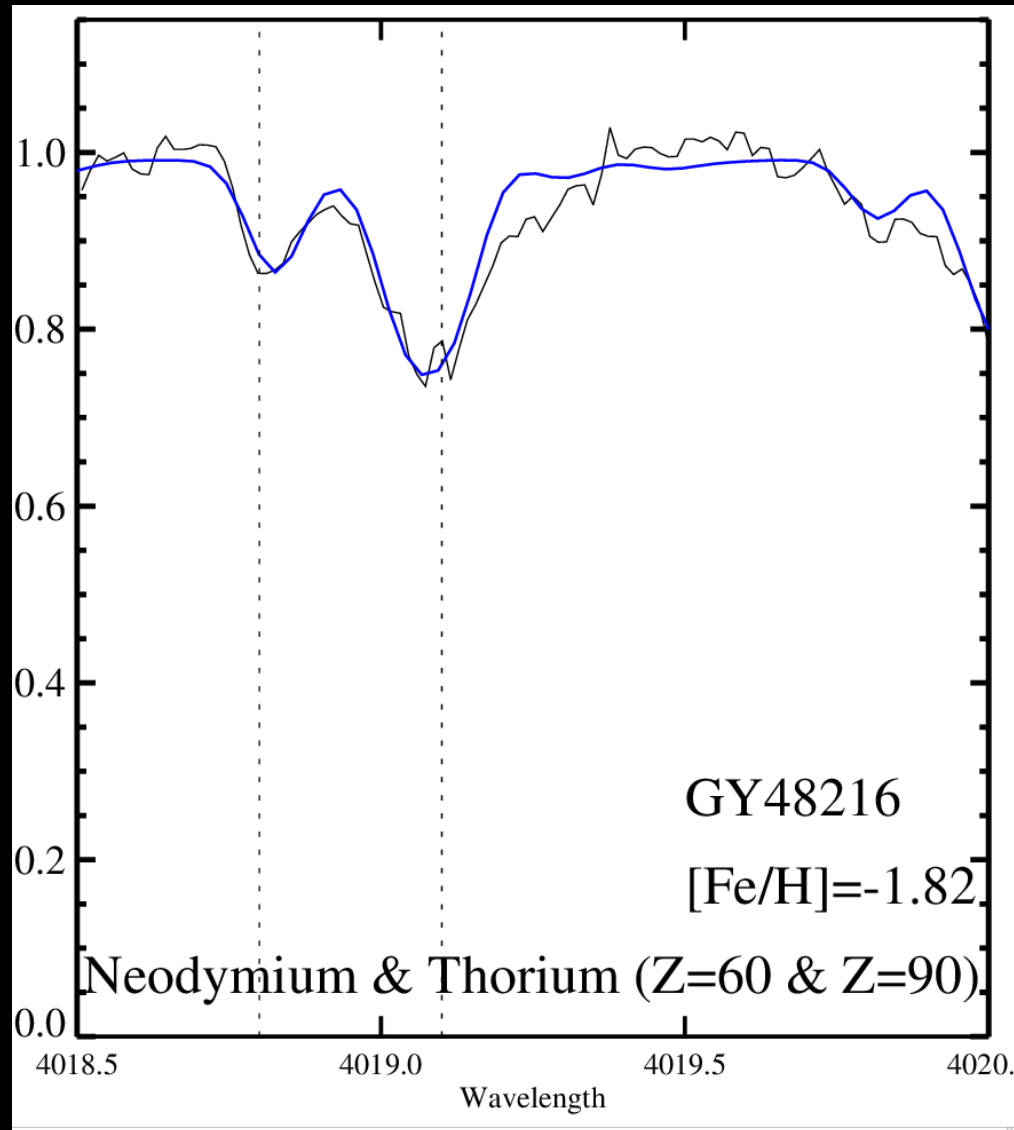
Radioactive cosmochronology with the r-process



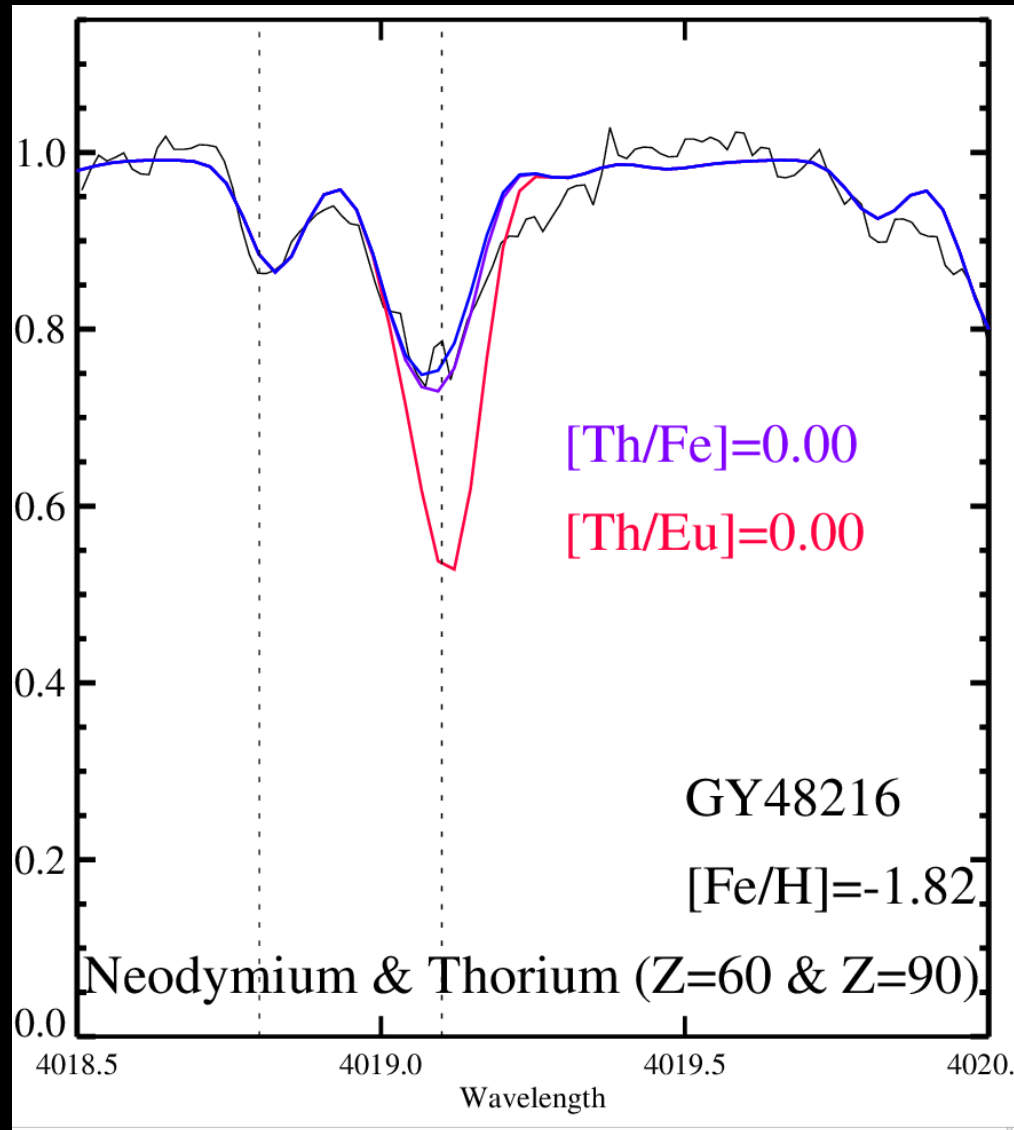
In prep.

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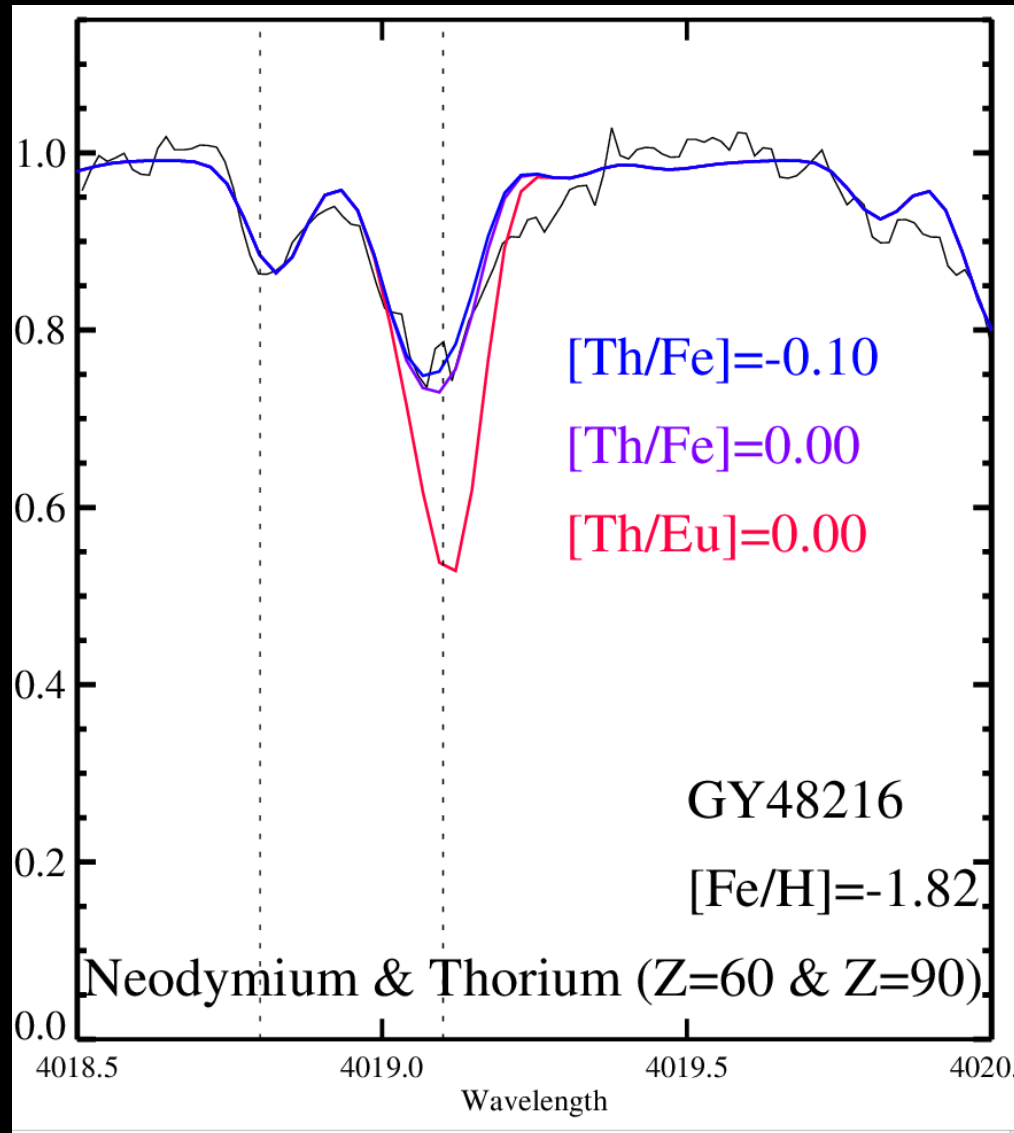
Radioactive cosmochronology with the r-process



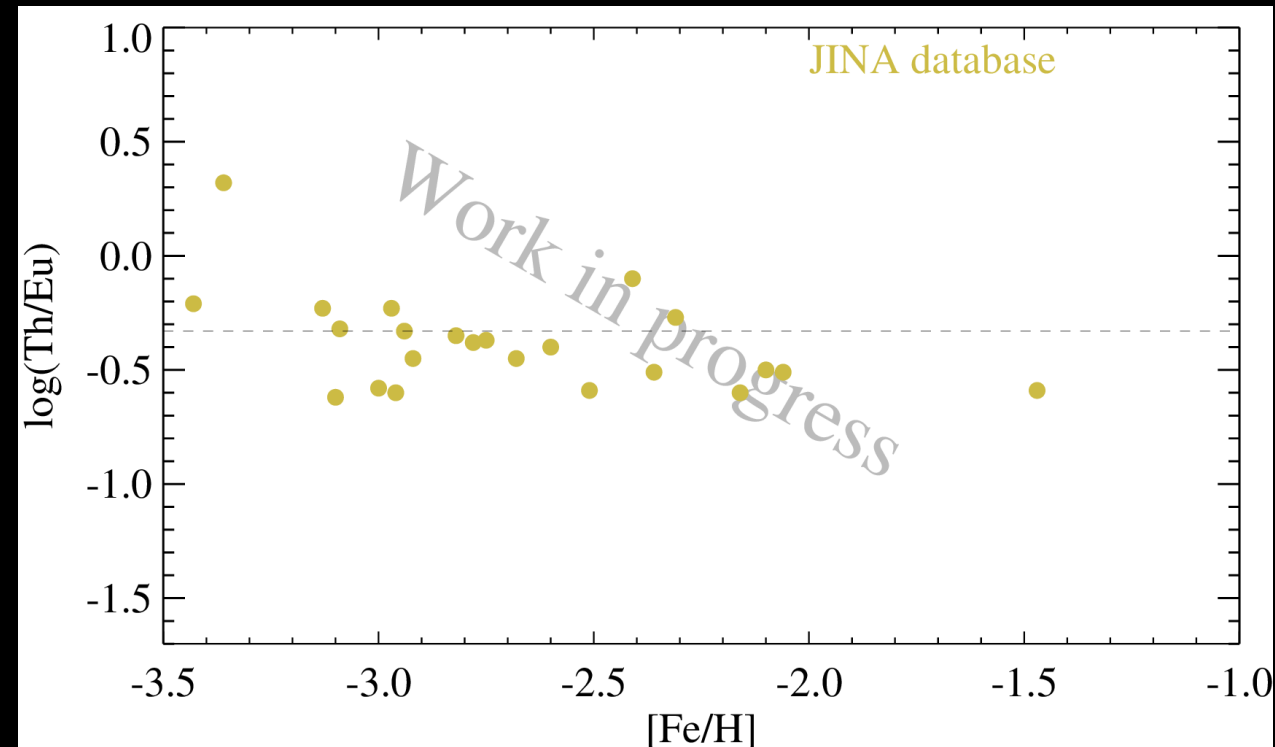
Radioactive cosmochronology with the r-process



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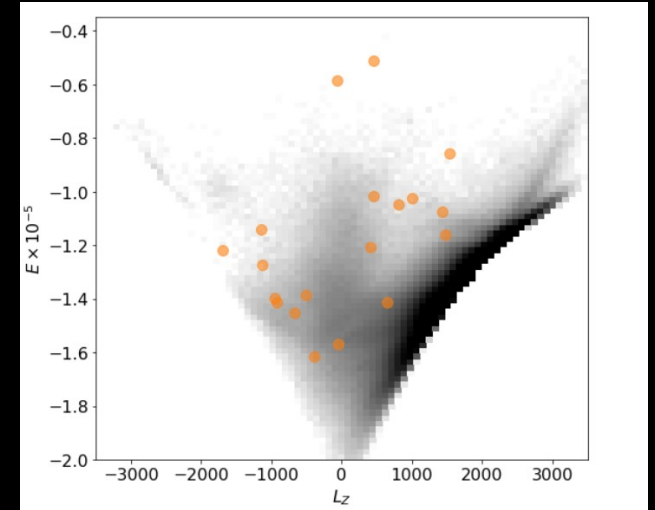


Radioactive cosmochronology with the r-process

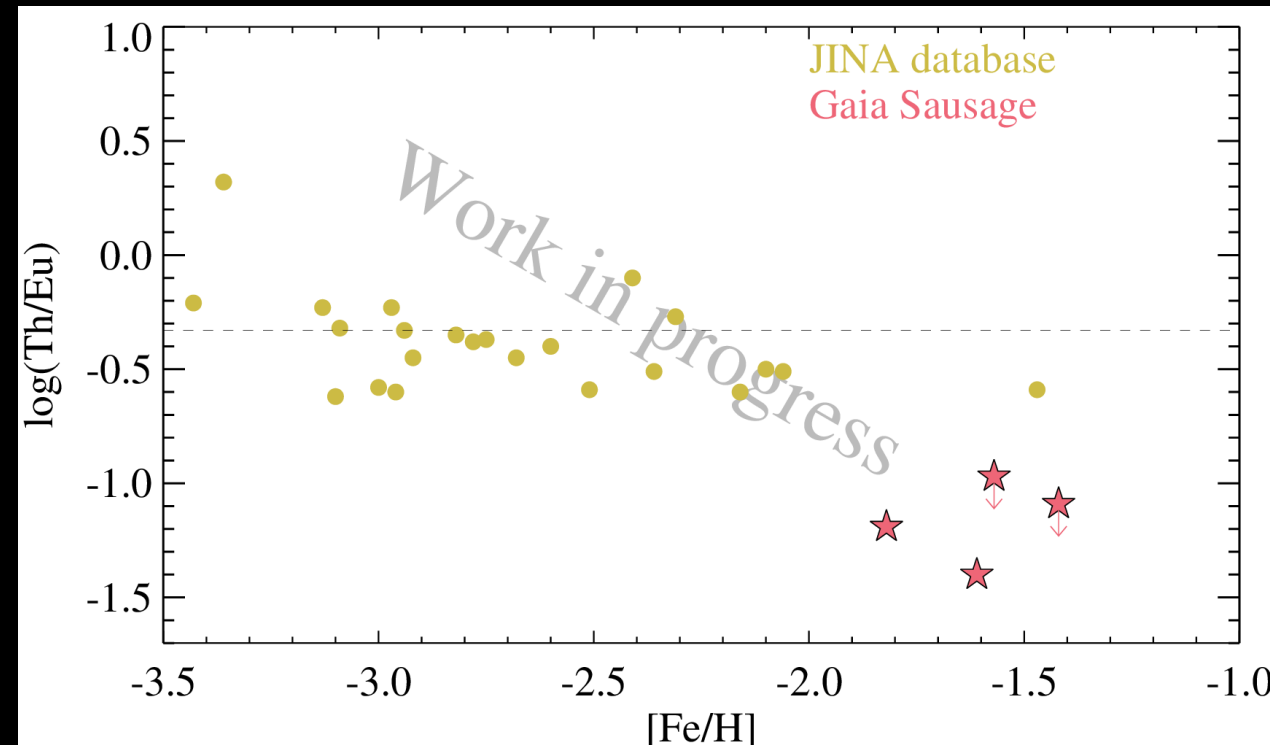
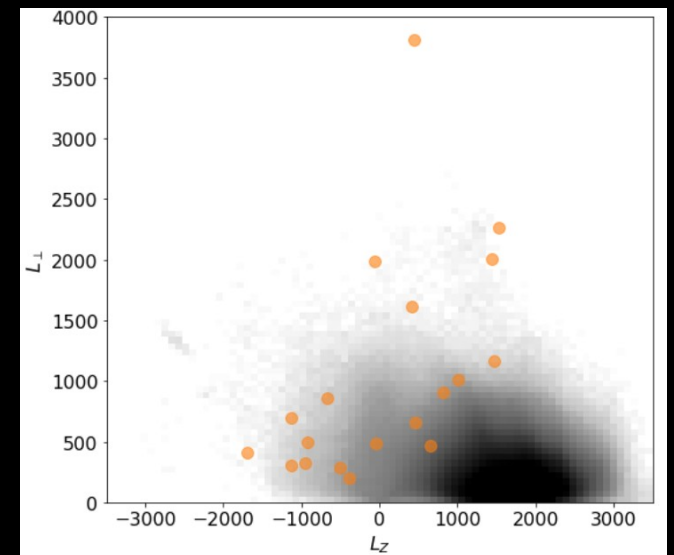


In prep.

Radioactive cosmochronology with the r-process

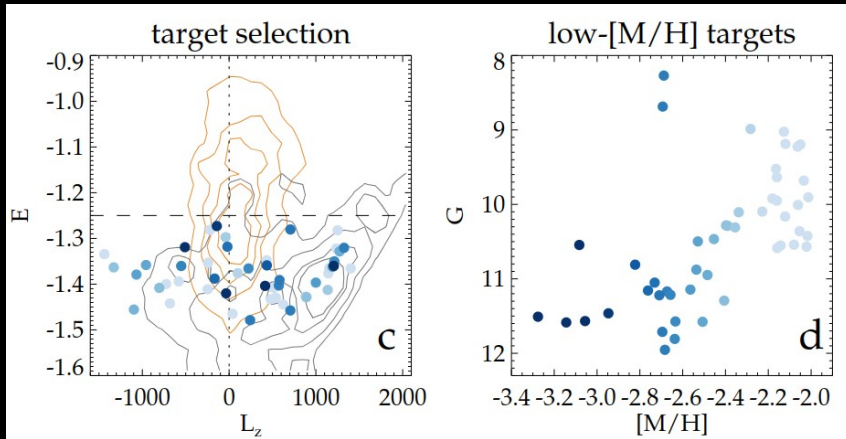


Belokurov pers. comm.



In prep.

r-process and in-situ population



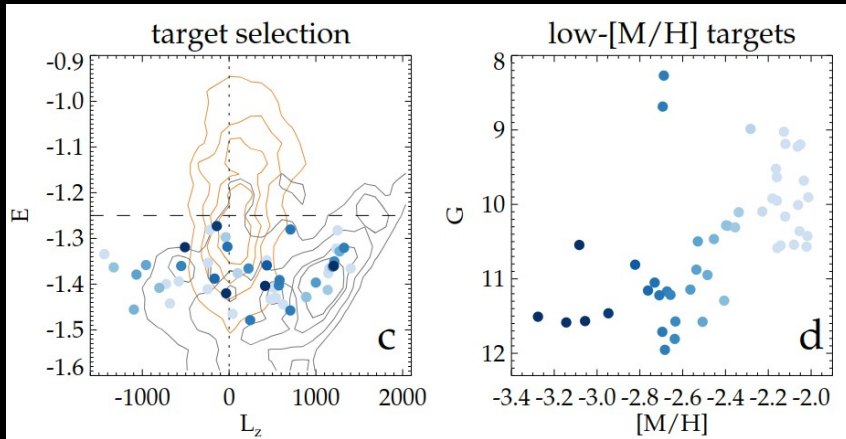
Belokurov pers. comm.



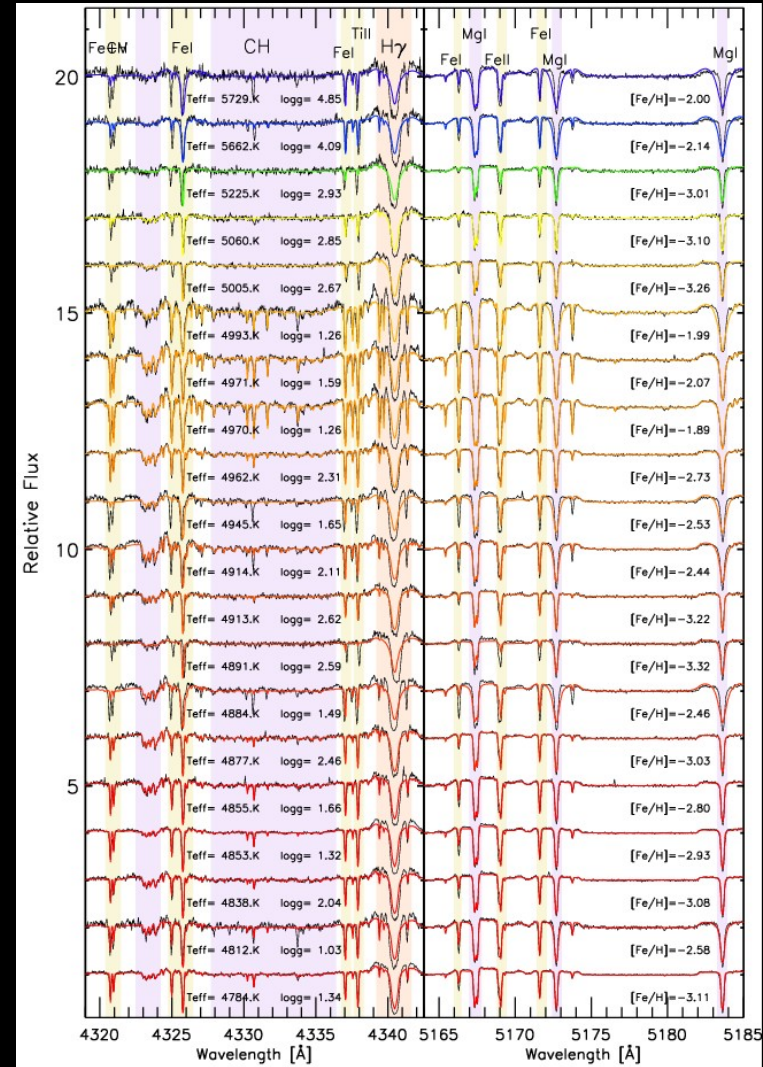
**Mercator Telescope- La Palma
April 2024**



r-process and in-situ population



Belokurov pers. comm.



DA, Myeong, Belokurov et al. (in prep)

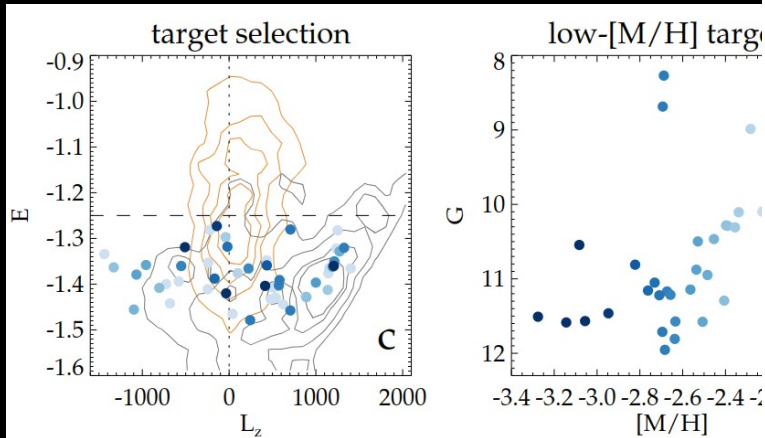


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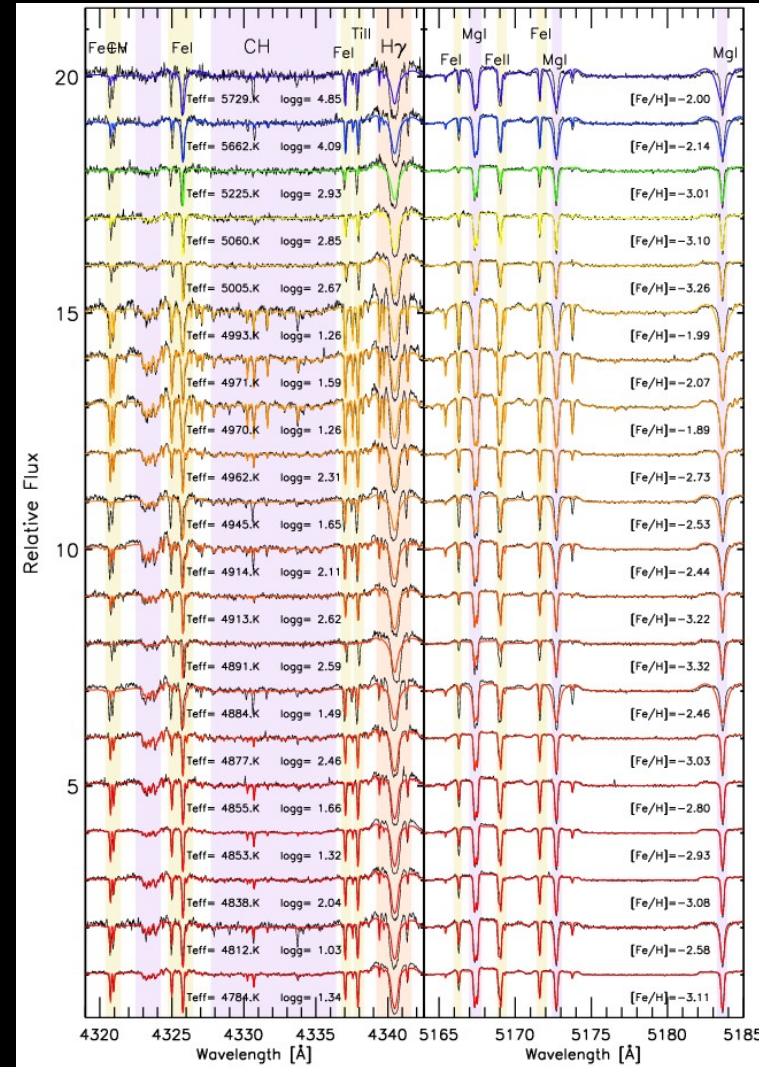
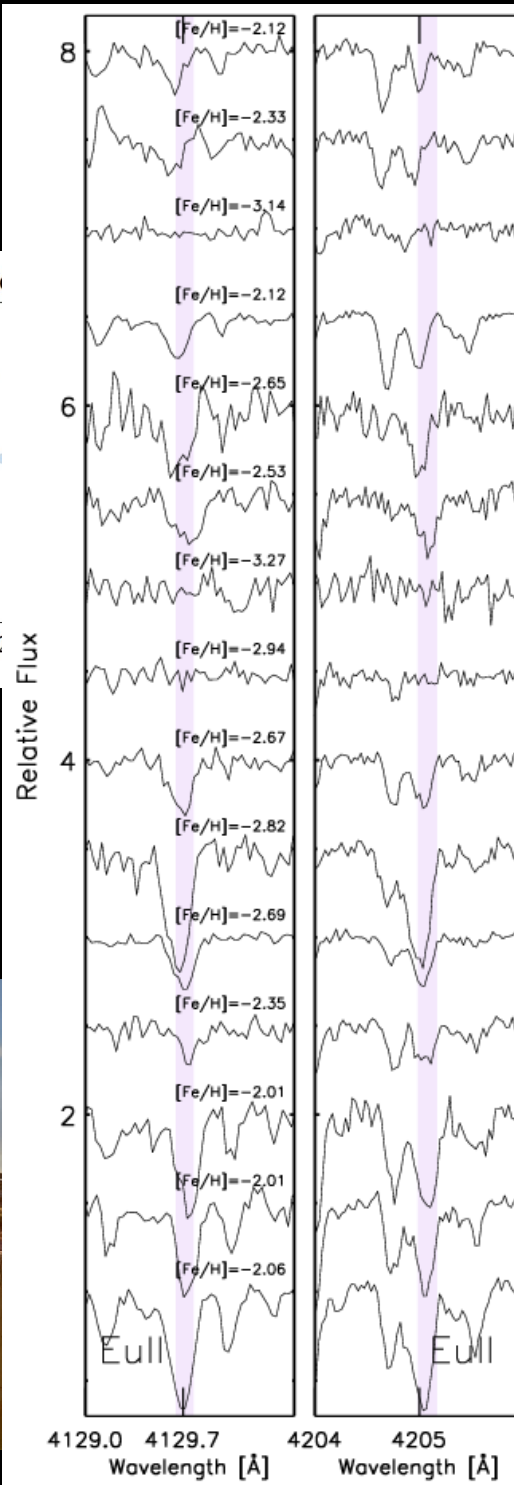


r-process a

population



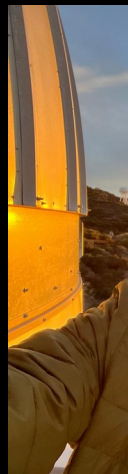
Belokurov pers. comm.



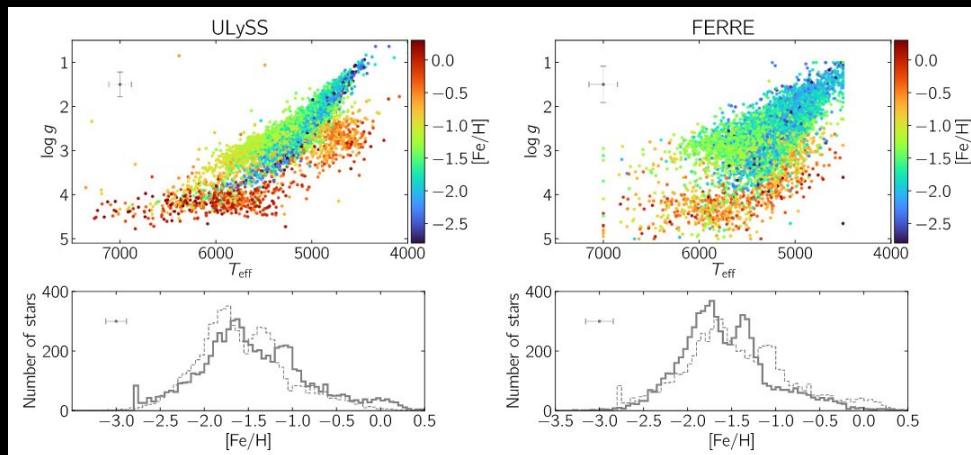
DA, Myeong, Belokurov et al. (in prep)



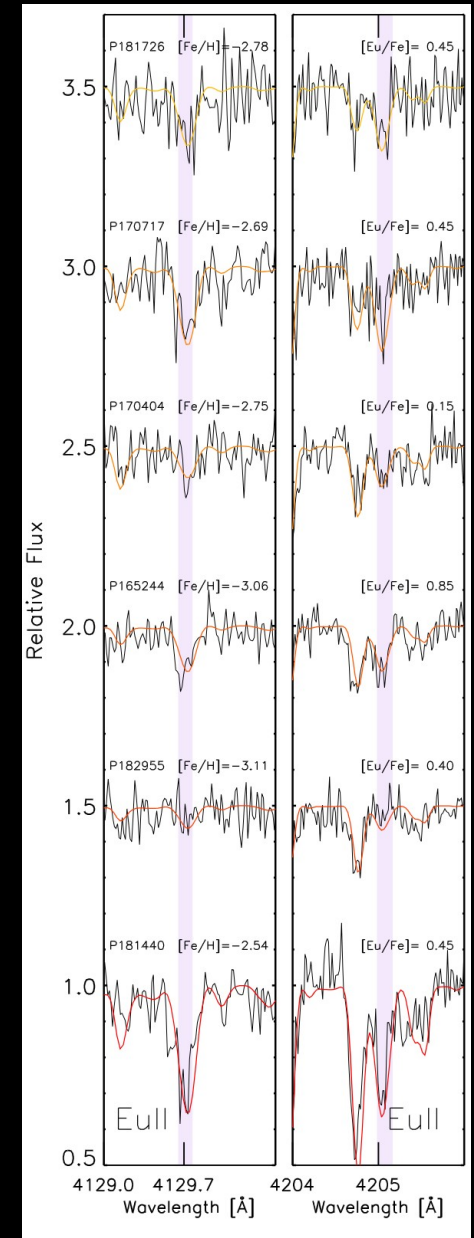
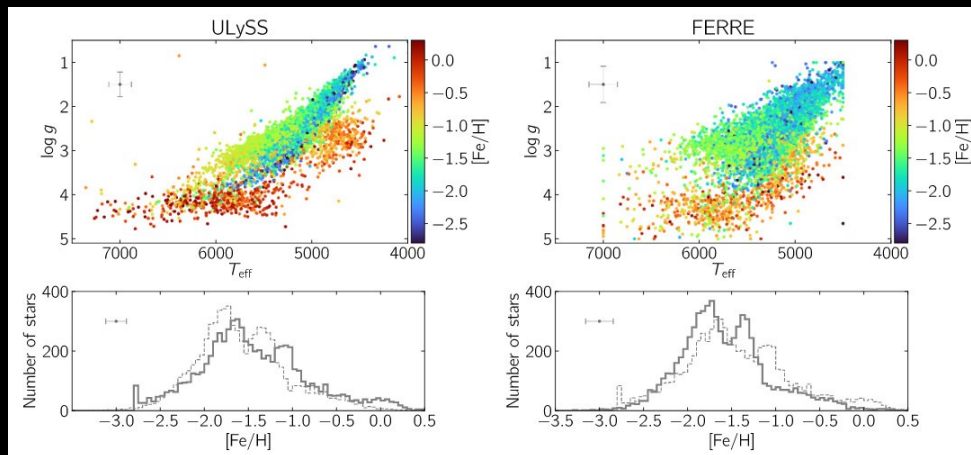
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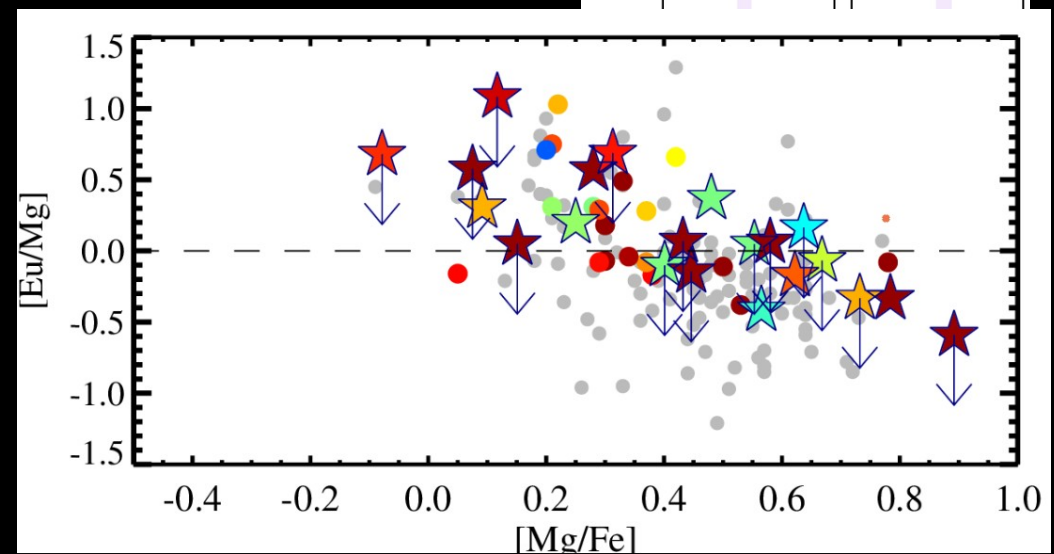
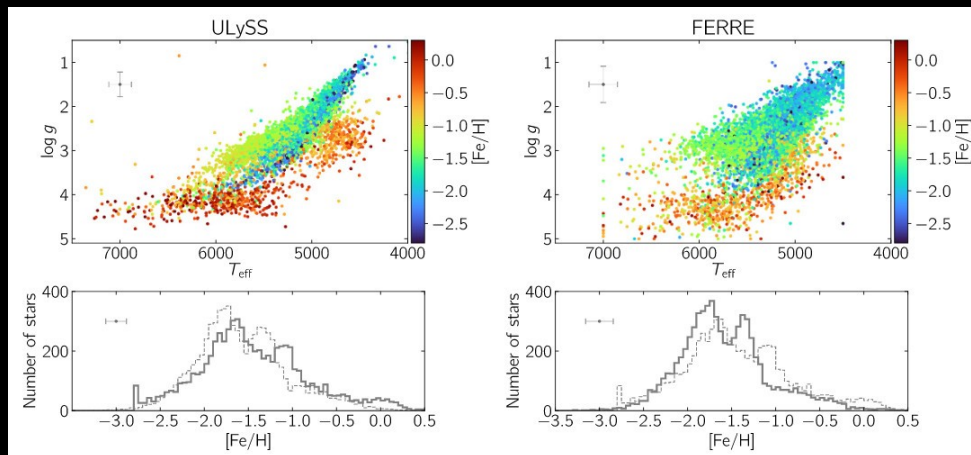
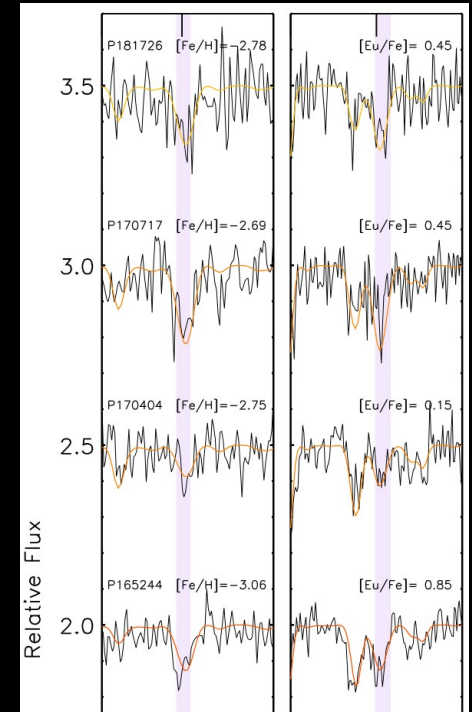
r-process and the inner Galaxy



r-process and the inner Galaxy



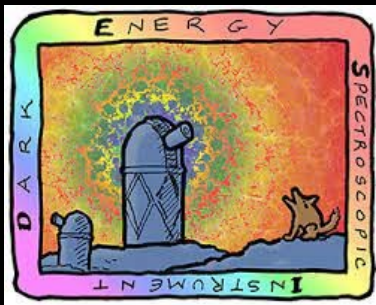
r-process and the inner Galaxy



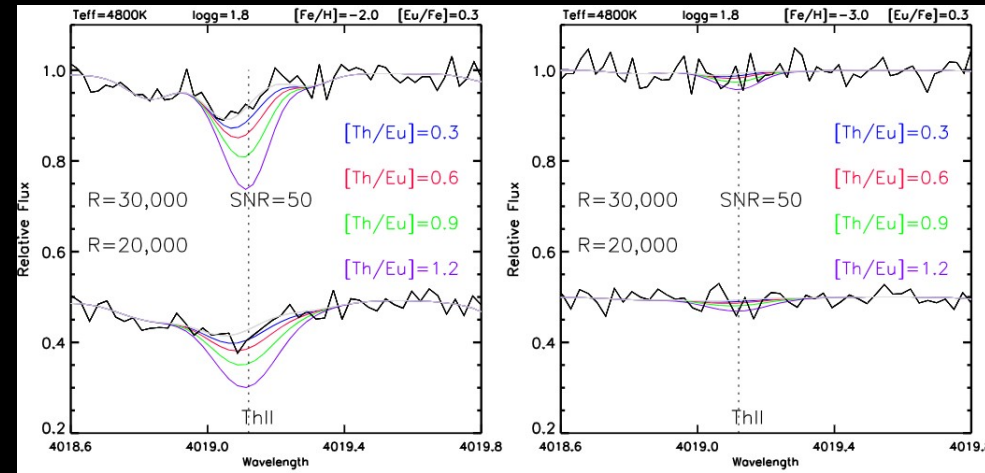
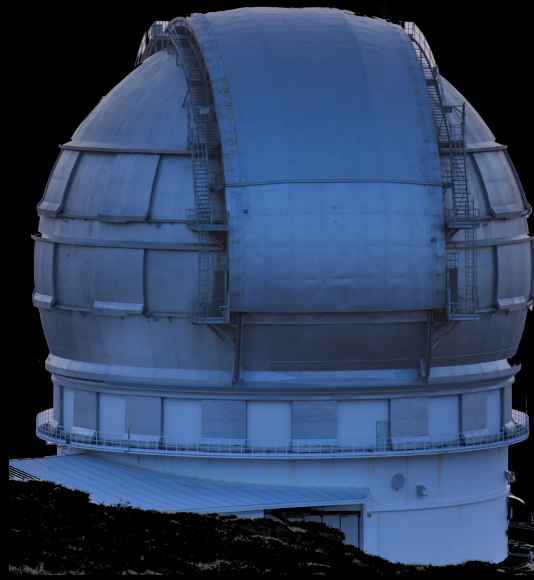
Arentsen et al. 2020

DA, Ardern-Arentsen, Sestito et al. (in prep)

Present and Future of r-process

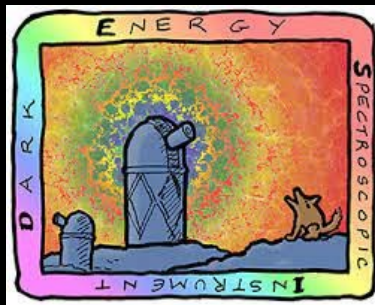


Present and Future of r-process



CHORUS at 10.4 GTC

Now with a Blue arm!

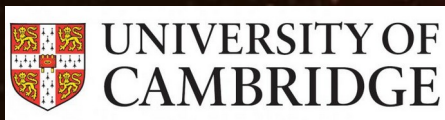


Summary

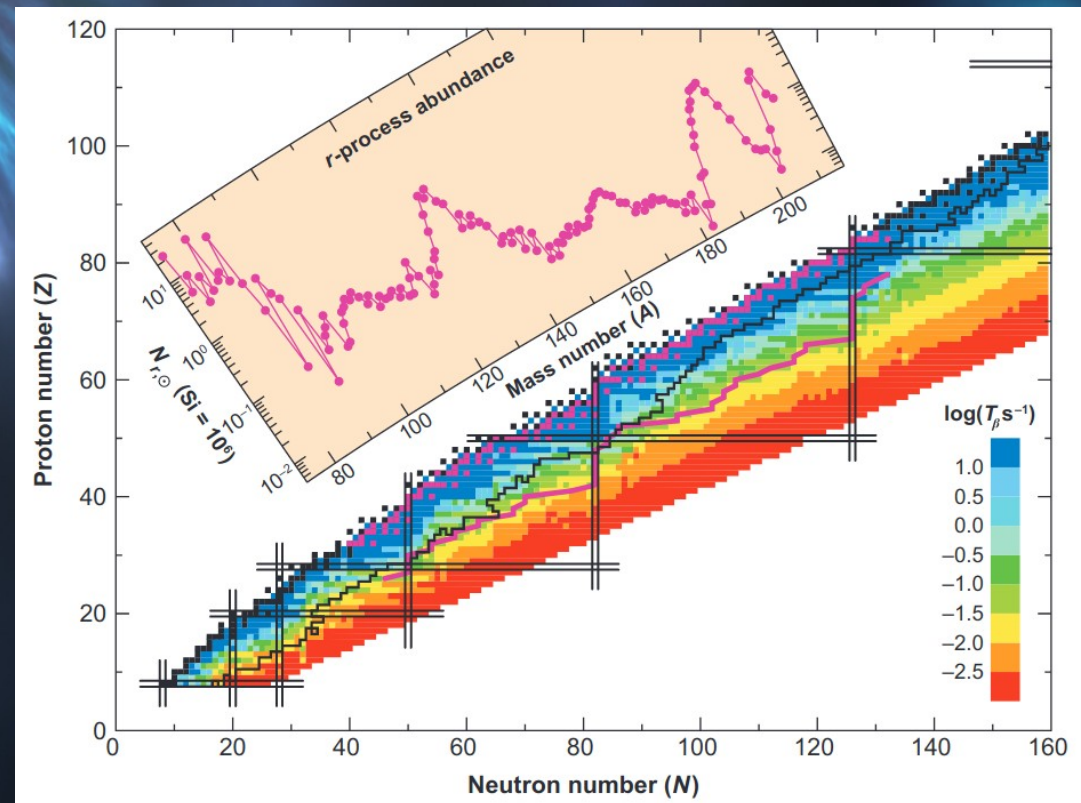
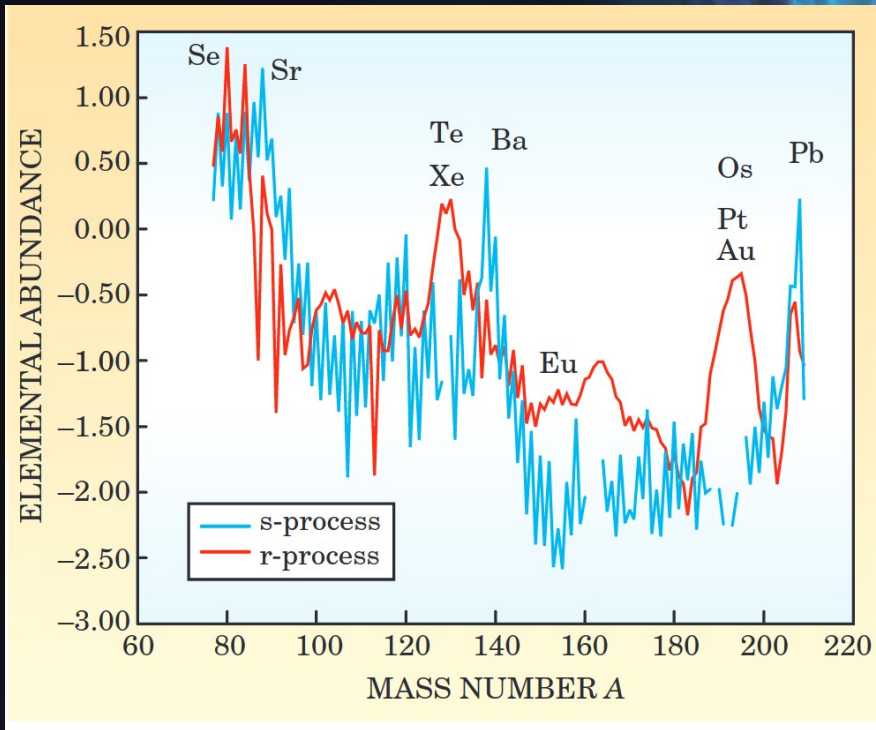
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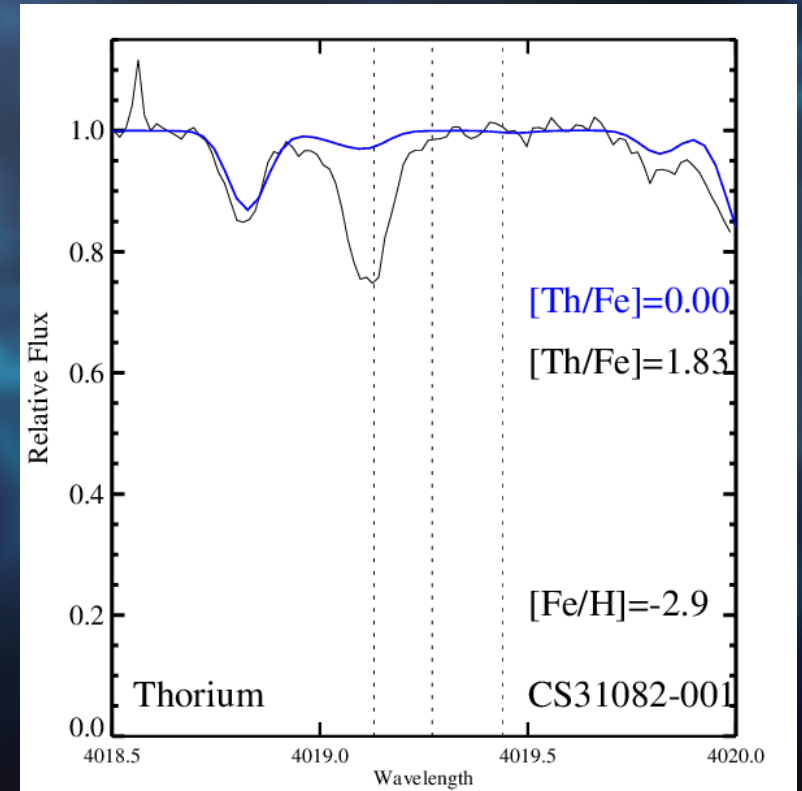
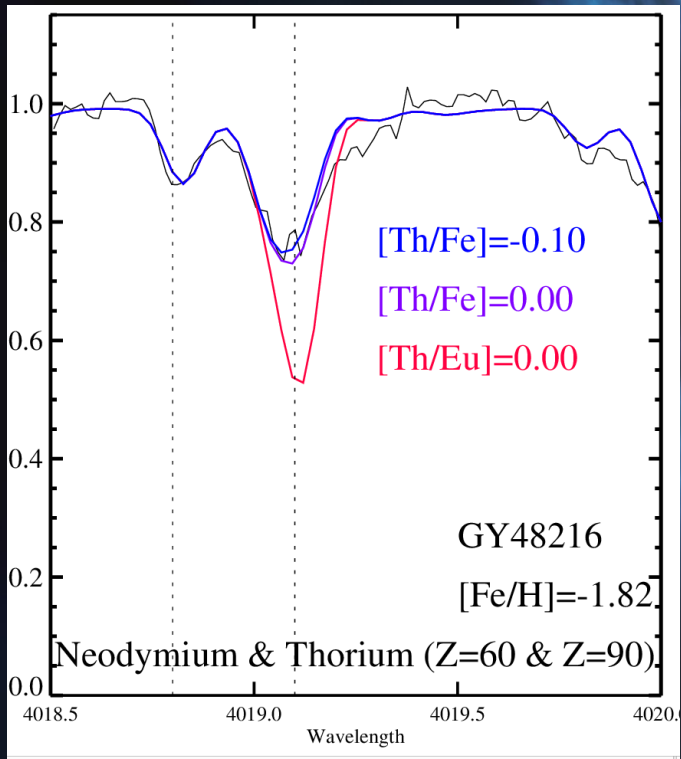
s- and r-process



Cowan & Thielemann 2004

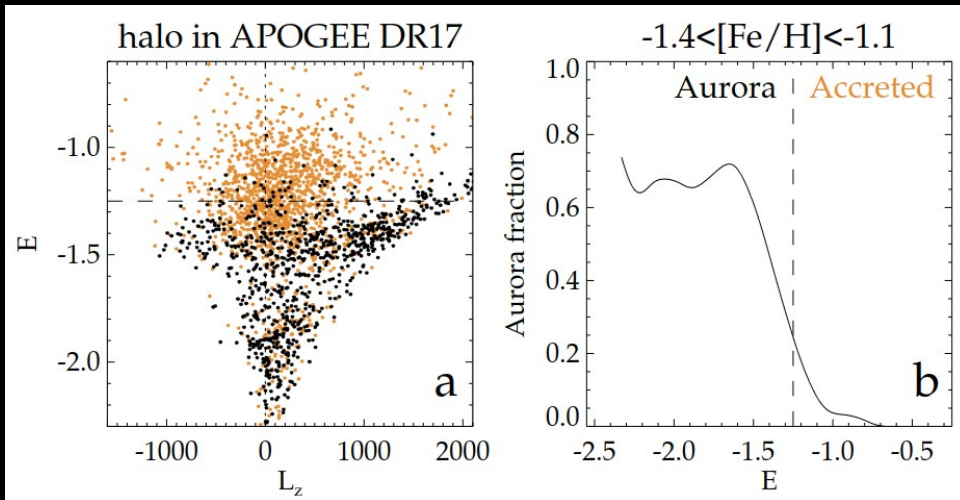
rapid-capture: r-process (Os, Ir, Pt) \rightarrow (Sm, Eu, Gd + Th, U)

Thorium measurements



CS31082 from Hill et al. 2002

Aurora Selection



Belokurov pers. comm.

