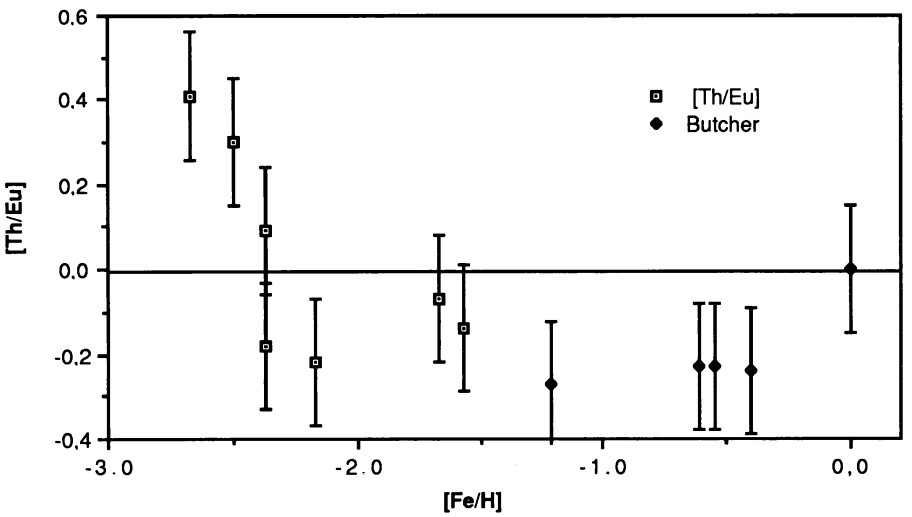
RELATIVE ABUNDANCES OF THORIUM AND EUROPIUM IN HALO STARS

P. François
DASGAL,Observatoire de Paris, 61, Av. de l'Observatoire
F-75014 Paris

Recently, Butcher (1987) and Morell et al. (1991) used the abundance of the long lived isotope ^{232}Th (half life 14 Gyrs), compared to that of a stable element neodymium, to determine an upper limit for the age of the Galaxy. However, this method suffers from the fact that neodymium is partly s-process and partly r-process whereas thorium is pure r-process. Europium which is pure r-process may be used to avoid this problem. This poster presents new measurements of the thorium and europium abundances in halo stars.

Observations were carried out partly at ESO (La Silla) with the CAT+CESand partly at the Coudé focus of the 3.6m CFH telescope



The Th/Eu radio-chronometer: Thorium and Europium are both r-process elements, so they alleviate one of the difficulties encountered with the Th/Nd chronometer. On figure 3, we plotted [Th/Eu] as a function of [Fe/H] used as a reference element. As Eu is a stable element whereas Th is not, we would expect a decreasing ratio Th/Eu as a function of decreasing metallicity (in the frame of a simple model) but we observe the contrary for the most metal poor objects. This could mean that effects of a different chemical history for these 2 elements are stronger than the effects of radioactive decay.

https://doi.org/10.1017/S0074180900120868 Published online by Cambridge University Press