Abundance Analysis of the Cetus II Dwarf Galaxy

Kaitlin Webber Collaborators: Jennifer Marshall, Terese Hansen



Chemical Evolution

• Metal poor stars provide snapshot into the early Universe





DES and Ultra-Faint Dwarf Galaxies



Location of ultra-faint dwarf galaxies(Conn et al. 2018)







• Low Sc, Ti, V abundances suggest low mass progenitor (Cowan et al. 2020)

(Webber et al. in prep)



Supernova Yield Fitting



Heger and Woosley (2010)



High Mass Progenitor Comparison





High Potassium Abundances in Ultra-Faint Dwarf Galaxies

(Webber et al. in prep)

 NLTE corrections applied to account for the poor assumption of LTE for K (Reggiani 2019)



Signs of Pollution by Rotating Stars



 $\prod_{U \in V} \left| \begin{array}{c} TEXAS \\ TEXAS \\ U \in V \\ E \in S \\ I \\ T \\ Y \end{array} \right|$

Sr vs K Abundances Suggest Rotating Progenitor



(Webber et al. in prep)



Stellar Streams



(Credit: Ting Li, S5 Collaboration and European Space Agency)

Summary

- Detailed chemical analysis of Cetus II
- Low Sc, Ti, and V abundances point to a low mass progenitor
- High potassium abundances in UFD galaxies could signal rotation in progenitors

