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New CEMP Stars Identified in the RAVE Survey

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We present an analysis of the elemental abundances for a sample of 34 relatively bright carbon-enhanced metal-poor (CEMP) stars with $[\text{Fe}/\text{H}] < -2$ and $[\text{C}/\text{Fe}] > +0.7$, identified from among candidate very metal-poor stars observed by the RAVE survey. Although RAVE does not obtain carbon abundance estimates, medium-resolution ($R \sim 1,800$) spectroscopic follow-up of some 1700 RAVE stars indicated a total sample of approximately 150 CEMP candidates. Once they were identified as CEMP stars, we used the South African Large Telescope (SALT) with the High Resolution Spectrograph (HRS, $R \sim 34,000$) to obtain high-S/N, high-resolution data for a sample of well over 100 CEMP stars. The subset of 34 stars we report on here includes objects with the lowest metallicities and highest $[\text{C}/\text{Fe}]$ ratios.

We obtain stellar parameter estimates, as well as $[\text{C}/\text{Fe}]$, $[\text{Sr}/\text{Fe}]$, $[\text{Ba}/\text{Fe}]$, and $[\text{Eu}/\text{Fe}]$ ratios, allowing for classification into the four CEMP sub-classes defined by Beers & Christlieb (2005): CEMP-s, CEMP-r, CEMP-i (r/s) and CEMP-no. Once our analysis is completed, the full sample will be the largest abundance study of CEMP stars available, and will inform a number of fields, including first-star nucleosynthesis, the r-, s-, and i-processes in the early Universe, and Galactic chemodynamical evolution.

Primary author: Ms RASMUSSEN, Kaitlin (University of Notre Dame)

Co-authors: Mr KALAMARIDES, David (University of Notre Dame); Dr DEPAGNE, Eric (South African Astrophysical Observatory); Dr YOON, Jinmi (University of Notre Dame); Prof. BEERS, Timothy (University of Notre Dame); Dr PLACCO, Vinicius (University of Notre Dame)

Presenter: Ms RASMUSSEN, Kaitlin (University of Notre Dame)

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