

Abstract Submitted  
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**Puzzling Out Nucleosynthesis in Introductory Astronomy Courses** SEAN O'NEILL, Pacific Lutheran University — The formation of chemical elements in the Universe is a fundamental yet challenging topic to treat in general education astronomy courses. Students in such courses are typically fascinated by the notion that the vast majority of everyday elements originate in stars and stellar explosions, but these students often lack the scientific and/or mathematical backgrounds to appreciate even the simplest particle physics calculations. Furthermore, many astrophysically significant nuclear reaction channels, such as the proton-proton chain or CNO cycle, are sufficiently intricate that students can easily fail to appreciate the overall effects of the reactions. In this talk, I will introduce a method of teaching nucleosynthesis tailored to a group-learning environment, such as an introductory astronomy lab. The basic structure of the lesson consists of having students 1) identify common elements, 2) assemble a visual puzzle that traces the lineage of these elements to astrophysical fusion processes (and ultimately the Big Bang), and 3) utilize the completed puzzle to draw inferences about both the nucleosynthetic reactions and the astrophysical contexts in which they occur.

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