

# The Role of Carbon-Oxygen Shell Interactions in the Nucleosynthesis and Final Fate of Massive Stars

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**Abstract:** Carbon-oxygen (C-O) shell interactions in the late evolutionary stages of massive stars play a crucial role in determining their final fate and have a significant impact on the pre-supernova and explosive nucleosynthesis. In this talk, I will explore the complex dynamics within C-O shells, and how these interactions drive the production of intermediate and heavy elements. Recent advancements in theoretical models and observational data provide new insights into how C-O shell interactions influence the synthesis of elements, shaping the chemical evolution of the star and the broader universe.

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