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The impact of stellar helium content and recent measurement effort

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Stellar helium content is one of the most important but mysterious factors that play an essential role in the evolution of our Universe. As the main product of the stellar nucleosynthesis process, helium produced by stars serves as the raw material for the next generation of stars. Stars with enriched helium are known to be hotter, brighter, and evolve faster; thus, our estimation of stellar ages would be biased if we do not consider helium content. Furthermore, stellar helium content also affects the measurement of the initial mass function by altering the mass-luminosity relation. Evidence shows that the relationship between stellar helium abundance and metallicity is more complex than the widely-used helium enrichment law. However, measuring stellar helium abundance remains difficult. I will introduce the current understanding of helium content from stars to galaxies and present our recent results on its measurement in open cluster stars.

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