

WST - the Wide-field Spectroscopic Telescope: surveying the Universe in the 2040's and beyond



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A New Bayesian Method for Analyzing the Structure of the Galactic Bulge Using δ Scuti Stars

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The Galactic bulge, the densely populated central region of the Milky Way, extends a few kilo-parsecs vertically above and below the Galactic plane. This region is pivotal for understanding the formation and evolutionary history of our Galaxy. Key to this understanding are the structural parameters of the bulge. Classical pulsators, such as RR Lyrae stars, Miras, and δ Scuti stars, are abundant in this region. Due to their well-defined period-luminosity relations, these stars serve as excellent distance indicators, enabling precise mapping of the Galactic bulge. Furthermore, combining WST's spectroscopic data with precise present/upcoming photometry of pulsating stars will allow for an unprecedented three-dimensional mapping of the Galactic bulge, shedding new light on its formation and evolution. We have developed a new methodology in the Bayesian framework to investigate the structure of the bulge using only photometric data.

I intend to present an overview of these findings based on our recent publication <https://doi.org/10.1093/mnras/stac1596> and highlight the future directions of this work.

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