



Contribution ID: 101 Contribution code: P2

Type: Poster

## Trumpler 5 - Cluster Properties and Exotic Populations

*Monday, August 19, 2024 4:32 PM (2 minutes)*

Star clusters are ideal test beds for studying the formation and evolution of stars in diverse environments. Open clusters, being relatively sparse systems and located at a closer distance, as compared to the globular clusters, allow a more detailed analysis of their individual single and multiple stellar members. Trumpler 5 is a populous, intermediate-age (~3.4 Gyr), metal-poor ( $[Fe/H] \sim -0.3$ ) open cluster, located approximately at 3000 pc. The cluster is well-known in the literature for its broadened main-sequence and large population of blue straggler stars (BSS). We have identified 3150 cluster members (membership probabilities,  $P > 0.6$ ) using a machine learning-based algorithm, ML-MOC. In addition to a broadened main-sequence, we notice a distinct gap in the color-magnitude diagram, right below the main-sequence turn-off. We identified 29 high-probability BSS, of which 12 have a counterpart in one or more of the UVIT/AstroSat far-UV filters F148W, F154W, or F169M. Additionally, we identify 8 blue-lurker candidates based on their bright fluxes in the far-UV and their location on the main-sequence in the optical color-magnitude diagram. We present a detailed analysis of the cluster properties, including differential reddening, the kinematics, and the dynamical properties of the cluster. Moreover, we present the properties of the BSS and blue lurker candidates and their unresolved hot companions based on the multi-wavelength spectral energy distributions covering data from far-UV to mid-IR.

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**Session Classification:** Flash Poster Presentations (in-person)