

Indian Institute of Astrophysics team surprised by discovery on hot stars and white dwarfs

The Hindu Bureau

BENGALURU

Astronomers and scientists at the Indian Institute of Astrophysics (IIA), along with their international collaborators, while studying the Omega Centauri, which is the most massive globular cluster system in our galaxy, have found that hot stars and white dwarfs emitted less ultraviolet radiation than expected.

This has come as a surprise for the team of astronomers and scientists whose research work has been published in *The Astrophysical Journal*.

“To our surprise, we found that the hot Horizontal Branch (HB) stars and white dwarfs in Omega Centauri were somewhat strange, that they emit relatively less light in the ultraviolet,” said Prof. Annapurni Subramaniam, director of IIA and co-author of the research work.

Strange hot stars

The team detected strange hot stars in the cluster using the Ultraviolet Imaging Telescope (UVIT) images

on AstroSat (India’s first dedicated space observatory, which has been operating since 2015).

The team found that these hot stars emitted much less ultraviolet radiation than expected from theoretical models and, in comparison with stars of another globular cluster, M13, having similar overall properties.

The IIA team combined the data from UVIT with archival data from other telescopes like Hubble Space Telescope and Gaia and used diagnostic plots called colour-magnitude diagrams (CMDs) to separate stars in various evolutionary phases.

The team investigated this anomaly further by

simulating the distribution of the HB stars in the Far Ultraviolet (FUV) – optical CMD.

Five populations

The cluster was found to consist of at least five populations of stars with varying ages and chemical compositions, including those formed with significantly high content of helium.

The enhancement in helium could be one of the reasons for the lesser far-ultraviolet radiation emitted by these stars. About 24% of the HB stars were found to be helium enriched and older and segregated towards the cluster centre than those with normal helium content.

MUSIC DANCE DRAMA

SRI RAMA Lalitha Kala Mandira, BSK II Stage, Bangalore - 70, Ph. 7760907939, 1) Grand Veena Concert by Ramana Balachandran of Thiruvannamalai, B.C. Manjunath - Mridangam, Anoor Sanaad- Khanjari on 1st January 2023 at 5.30 p.m. at Sri Rama Lalitha Kala Mandira Concert hall. 2) H.S. Prashanth - Vocal, Nalina Mohan - Violin, N. Vasudev-Mridanga, Ranganatha Chakravarthy on Ghatam on 8th January, 2023 at 5.30 p.m. All are welcome. G.V. Krishna Prasad Hon. Secretary

COMING SOON

NAMMA
PRO
One pl