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CHEMICAL PATTERNS IN THE OLD METAL-POOR GLOBULAR CLUSTER NGC 4372

(PATRONES QUÍMICOS EN EL VIEJO Y POBRE EN METALES CÚMULO GLOBULAR NGC 4372)

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POR

CAMILA ALEJANDRA VALENZUELA CALDERÓN

Profesor Guía: Dr. Sandro Villanova
Departamento de Física
Facultad de Ciencias Físicas y Matemáticas
Universidad de Concepción

Comisión: Dr. Douglas Geisler
Dr. Sandro Villanova

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Abstract

Globular Clusters are ideal witnesses of past star formation and chemical evolution. They are the natural laboratories for studying a wide variety of fundamental problems in galactic astrophysics.

Until a few decades ago it was believed that stars in a Globular Cluster had the same age and chemical composition, with the only exception of ω Cen, that is, it had a Simple Stellar Population. Later on, and thanks to technological progress, it was discovered the exciting field of Multiple Populations within GC, which provide information on how they formed and on the likely relation with the host galaxy.

In particular, light elements (from C to Si) are associated with the MP phenomenon. The Na-O anticorrelation stands out as the principal chemical signature that it may even used to define a GC.

The spread in light elements must be due to a self-enrichment within GCs in the early stages of its formation, when a second generation of stars formed from enriched material of more massive stars. Several kind of polluters have been proposed: intermediate-mass AGB stars, fast-rotating massive stars and massive-interacting binaries.

NGC 4372 is one of the most metal-poor GC ([Fe/H] = -2.36). It is located near to the galactic disk and it suffers differential reddening. In this work, we present the abundance analysis of 7 red giant branch stars based on UVES spectra. We confirm the presence of the Na-O anticorrelation but there is no evidence for the Mg-Al anticorrelation. The behaviour of Fe-peak and α- elements is in excellent agreement with other GCs and halo field stars of similar metallicity. The Eu abundance has been measures for the first time and we found that the nucleosynthesis of neutron-capture elements was dominated exclusively by the r-process.