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SPECTRAL MORPHOLOGY AND ROTATION IN THE OPEN CLUSTER NGC 6025

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RESUMEN

Hemos clasificado espectralmente a los probables miembros más brillantes del cúmulo abierto NGC 6025 y hemos calculado sus velocidades de rotación. Encontramos un módulo de distancia de 9.80 ± 0.06 (error probable) y derivamos una edad de 84 millones de años para este cúmulo. La estrella más brillante de NGC 6025, HD 143448 fue clasificada como B1Ve y es una estrella azul desubicada (*blue straggler*) tal como fue propuesto por otros autores (ver Mermilliod 1982). Hemos encontrado tres estrellas peculiares (dos de Si y una de Hg-Mn?) y dos binarias de dos espectros, una de ellas previamente estudiada pero probablemente no miembro del cúmulo. Otra estrella del campo tiene emisión, pero probablemente tampoco es miembro del cúmulo. El promedio de la rotación axial para los miembros de este cúmulo es 73% del promedio de rotación de las estrellas de campo de igual temperatura.

ABSTRACT

We have performed spectral classification and measurements of the axial rotation velocity for the brightest stars in the region of the open cluster NGC 6025. A distance modulus of 9.80 ± 0.06 (pe) and an age of 84 million years were derived. The brightest star of the cluster, HD 143448 was classified as B1Ve and it is a blue straggler as proposed by other authors (see Mermilliod 1982). We found three peculiar stars (two Si and one Hg-Mn?). Another star in the field shows emission but is probably a non-member. We also found two SB2 binaries. The average axial rotation for the cluster members seems to be 73% of the average rotation of the field stars with the same temperature.

Key Words: Hertzsprung-Russell and C-M diagrams — open clusters and associations: individual (NGC 6025) — stars: rotation

1. INTRODUCTION

The galactic cluster NGC 6025 was studied several decades ago in two papers. Feinstein (1971) provided for the first time, UBV photoelectric measurements and derived a distance modulus of 9.4 ± 0.1 and an age of 10^8 years. Four years later Kilambi (1975) published *ubvy* photoelectric and UBV photographic data and obtained 9.7 ± 0.1 for the distance modulus and an age of 9×10^7 years. This author also derived the luminosity function and showed that this cluster has fractionally more bright members than does the Pleiades cluster. There is no spectroscopic study on NGC 6025 even as basic as an MK spectral classification of its members. Paunzen et al. (2001) classified star number 20 in a paper devoted to spectral classification of candidates for λ Bootis stars. There are also some papers in the literature that include NGC 6025 in statistical studies of open clusters (see Kharchenko et al. 2009).

In this paper we classify in the MK system the stars that have been considered to be members in previous papers although we use the new SPM4 Catalogue (van Altena et al. 2010, private communication) to confirm membership. We include other stars in the field of the cluster and we estimate the spectral types of 33 stars and the rotational velocities for 27.