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MULTI-EPOCH VLA OBSERVATIONS OF IRAS 16293-2422B AND THE MODELING OF ITS CONTINUUM EMISSION

A. Hernández-Gómez[1,2,3], D. Quénard[2,3], L. Loinard[1], and E. Caux[2,3]

We present multi-epoch interferometric observations of IRAS 16293-2422B taken with the Very Large Array at 0.7, 1, 1.3, 2, 3, 6 and 13 cm. We made continuum maps of the source at these wavelengths and measured a proper motion of -5.7 ± 1.4 mas yr^{-1} in R.A. and -21.0 ± 1.1 mas yr^{-1} in Dec. We also measured the spectral energy distribution for the source and found that the emission doesn't show any break in frequency as IRAS16293-2422A does, which is associated with free-free emission. We also observe that the size of this source increases always with the frequency, reaching a maximum of about 200 marcsec at 7 mm. This could indicate us that the emission is coming mostly from dust. We built up a model with a radiative transfer code (GASS-LIME) by considering the dust opacity, and the radial density and temperature profiles for the source. We show a comparison between our model and the continuum maps, proving that we are able to reproduce satisfactorily the continuum emission and the size for all the observations.

[1] Instituto de Radioastronomía y Astrofísica, Universidad Nacional Autónoma de México, Campus Morelia, Apartado Postal 3–72, 58090 Morelia, Michoacán, México (a.hernandez@crya.unam.mx).
[2] Université de Toulouse, UPS-OMP, IRAP, Toulouse, France.
[3] CNRS, IRAP, 9 Av. Colonel Roche, BP 44346, F-31028 Toulouse Cedex 4, France.

PAGB STARS IN BINARY STELLAR POPULATION SYNTHESIS MODEL

F. C. Hernández-Pérez[1], G. Bruzual[2], and G. Magris[3]

Post Asymptotic Giant Branch (PAGB) stars are luminous objects ($10^3 - 10^4 L_\odot$) in final stages of their evolution before reaching the white dwarf cooling sequence. They are an important key to understand galaxy evolution since they are hot enough to contribute to the UV excess in old stellar systems. Binary interactions may change the evolutionary path over the HR diagram and the total number of PAGB stars may also change. In this contribution we remark that rare Yellow PAGB stars are formed through mass transfer in a binary system, however the probability of formation is low. We use a recent implementation of the BC03 stellar population synthesis model that allows a stochastic sampling of the initial mass function to evolve single stars. We select, assemble and evolve binary systems using our binary code. We run ten realizations of simulated clusters for a Z=0.0005, M=10^6 $M_\odot$, BF=0.9. One evolved stars formed in a binary system appears near the region of observed yellow PAGB stars. To demonstrate that these rare stars may be form through binary interaction, we select binary pairs with period less than critical to ensure mass transfer. The yellow PAGB star is formed by binary interaction. Binary and stochastic effects on the formation of yellow PAGB and the influence on spectral and photometric properties of the stellar systems will be studied in future work.

[1] Universidad de Los Andes, Facultad de Ciencias, Departamento de Física, Grupo de Astrofísica Teórica. Mérida, Venezuela (fabiolah@ula.ve).
[2] Instituto de Radioastronomía y Astrofísica, Universidad Nacional Autónoma de México, Campus Morelia, Morelia, Michoacán, México (g.bruzual@crya.unam.mx).
[3] Centro de Investigaciones de Astronomía, Mérida, Venezuela (magris@cida.gob.ve).