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The search for post-AGB stars with dusty discs

T. Lloyd Evans[1,2], A.M. Smith[1], J. McCombie[1], and P.J. Sarre[1]

[1] School of Chemistry, University of Nottingham, University Park, Nottingham, NG7 2RD, United Kingdom
e-mail: tle@nottingham.ac.uk

[2] SUPA, School of Physics and Astronomy, University of St Andrews, North Haugh, St Andrews, Fife, KY16 9SS, United Kingdom

Abstract. A systematic search has been made for stars of a subset of the presumed post-AGB population, which are characterised by their RV Tauri-like spectral energy distributions in the 1-60 micron range as well as by near-solar spectral types. Data from several large surveys have been combined to find such stars, which include classical RV Tauri stars, stars which lie outside the Type II Cepheid instability strip and have at most small-amplitude pulsations, and stars such as U Equ which have superimposed absorption features which arise in cool circumstellar gas. All are thought to have dusty circumstellar discs.
Stars which have RV Tauri-like colours in the IRAS [12]-[25], [25]-[60] diagram were observed spectroscopically and by JHKL photometry. JHK data from the 2MASS catalog were combined with IRAS photometry to select stars with red [12]-[25], an excess at K and a large K-[12] value, reproducing the photometric characteristics of the stars selected earlier except for the lack of L and 60 micron measurements. The 2MASS catalog was cross-correlated with stars classed as RV?, SR, SRD or Cep. A substantial number of new probable RV Tauri stars were found, as well as F stars with smaller amplitudes of pulsation. M stars with excesses at L and hot emission line stars were also found. Several stars have emission lines suggesting edge-on discs, and a second star with sharp TiO bands like U Equ was also found. Strong X-ray emission suggested that several supposed SRD variables are chromospherically-active stars.

Key words. Stars: variable – Stars: infrared – Stars: circumstellar matter

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Send offprint requests to: T. Lloyd Evans