

## SEMI-EMPIRICAL DETERMINATION OF THE POSITION OF RRAB STARS ON THE H-R DIAGRAM

J. JURCSIK AND G. KOVÁCS

*Konkoly Observatory, H-1525 Budapest XII, Box 67, Hungary*

In a recent series of papers, it was shown that the metallicity and the absolute V, I and K mean magnitudes of RRab stars can be accurately calculated using only their periods and the low order Fourier parameters of the V light curves. The application of these formulae in conjunction with the synthetic colours of the model atmospheres and with the theoretical pulsation periods enables us to determine all the basic physical parameters (*i.e.*  $\log L$ ,  $\log T$ ,  $\log M$  and  $[\text{Fe}/\text{H}]$ ) of any variable with an accurate light curve. As a result, we might trace evolutionary tracks on the H-R diagram by plotting the stars with the same mass and metallicity. From a present sample of nearly 300 stars, signs of differences in the evolutionary states can be suspected but not yet proven.

The accumulation of large numbers of precise light and colour curves, on the one hand, will further improve the empirical formulae and therefore the accuracy of the derived parameters and, on the other hand, will increase our chances of constructing better-populated empirical evolutionary tracks.