THE RESOLVED STELLAR POPULATIONS OF LEO A & GR 8

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The complex effects that determine the shape of an observed Colour Magnitude Diagram (CMD) are best disentangled through numerical simulation. We make synthetic CMDs by randomly extracting stars from theoretical stellar evolution tracks using a series of adopted initial conditions, including an Initial Mass Function. Utilizing reliable error estimates on our photometry provided by the program DoPHOT we apply a Maximum Likelihood technique to quantitatively determine which of the numerous different possible models is the most probable match to the data. From these comparisons we obtain a better understanding of how star formation proceeds in the relatively simple environments provided by Dwarf galaxies.

We have begun with a study of two extremely metal poor Magellanic Dwarf Irregular galaxies Leo A and GR 8. Our data originates from the Hoessel & Saha long term project to detect Cepheids in and hence determine the distance to nearby galaxies. This program provides us with high quality images, and thus accurate CMDs; and the distance estimates provide reliable absolute magnitudes for the stars in a CMD, enabling a detailed interpretation. Both galaxies have recently been found to be at a distance of 2.2 Mpc (Hoessel et al. 1994 *A.J*, **108**, 645; Tolstoy et al. 1994 *A.J, submitted*).

We do not probe very deeply into the CMDs of Leo A or GR 8, but it is clear that both have been forming stars at least as far back as we can observe, $\sim 10^9$ years. The star-formation rate was also higher in the past ($4-7\times10^8$ years ago) by a factor of at least 20 in Leo A, and ~ 5 for GR 8. The conclusions reached from the CMD analysis are strengthened by the differences between the Hα images of both systems. GR 8 displays numerous HII regions and extensive Hα filaments (Hodge, Lee & Kennicutt 1989 *P.A.S.P.*, **101**, 640), revealing active present day star formation, unlike Leo A which has only four HII regions which are not distributed over the whole area of the galaxy.