

OB ASSOCIATIONS IN NGC 6822

CHRISTINE D. WILSON

Department of Astronomy

University of Maryland

College Park, MD, 20742 U.S.A.

ABSTRACT. An objective, automated group-finding algorithm has been used to re-identify the OB associations in the irregular galaxy NGC 6822. The properties of the OB associations, such as size, age, and mass, are compared with those of OB associations in M33 identified using similar data and techniques. These two data sets allow the first objective comparison to be made of the properties of OB associations in two quite different galaxies.

Determining the properties of OB associations in galaxies is important for understanding star formation. Unfortunately, comparing OB associations between different galaxies has been difficult due to the subjectivity involved in identifying OB associations by eye from photographic plates (Hodge 1986). With the advent of CCDs and automatic photometry programs, it is now possible to obtain accurate photometry for large samples of stars in Local Group galaxies; this photometry can then be fed into automated programs to search for groups of blue stars. The real power of such automated techniques is in comparing association properties between different galaxies, since essentially identical samples of stars can be selected and analyzed for each galaxy.

New CCD photometry of the Local Group irregular galaxy NGC 6822 has been obtained in the B and V bands at the Palomar 60" telescope. OB associations were identified using a "friends of friends" algorithm (Wilson 1991). All stars with $V < 21$ and $B - V < 0.5$ and a grouping radius of 26 pc were used to identify the associations. Thirteen associations were identified, of which nine correspond well to associations identified by Hodge (1977). The remaining four associations lie in the main body of the galaxy where there is a higher background density.

To match the selection criteria used for M33 (Wilson 1991), OB associations in NGC 6822 were re-identified using $V < 20.3$, $B - V < 0.5$, and a grouping radius of 22 pc. Four associations were identified using these criteria, compared to forty-one in the inner kiloparsec of M33. The number of stars, masses, and ages of the OB associations are very similar for both galaxies, while the median diameters are 30% smaller in NGC 6822 than in M33. Depending on the inclination of NGC 6822, the number of associations per unit area is 20-40% of that of the inner disk of M33, while the surface density of blue stars in NGC 6822 is 35-70% of that of M33.

References:

Hodge, P. W. 1977, *Ap. J. Suppl.* **33**, 69.

Hodge, P. 1986, in *Luminous Stars and Associations in Galaxies*, eds. C. W. H. de Loore, A. J. Willis, and P. Laskarides (Reidel: Boston), 369

Wilson, C. D. 1991, *A. J.* **101**, 1663.