

## ABUNDANCES OF MAGELLANIC CLOUD CLUSTERS

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RESUMEN. Hemos obtenido fotometría de CCD en el sistema de Washington para una gran cantidad de cúmulos de edades intermedias a viejas en las Nubes de Magallanes. Usamos estos resultados para investigar la relación entre la edad y metalicidad en estas galaxias.

ABSTRACT. Washington CCD photometry has been obtained for a large sample of intermediate-old age clusters in the Magellanic Clouds. The data will be used to investigate the age-metallicity relationship of these galaxies.

*Key words:* CLUSTERS-GLOBULAR — GALAXIES-MAGELLANIC CLOUDS

## I. INTRODUCTION

Good abundance determinations are still lacking for Magellanic Cloud clusters despite their crucial role in distance and age-metallicity calibrations. We have therefore undertaken a program to obtain Washington CCD photometry in order to determine accurate abundances for a large sample of Magellanic Cloud clusters. Geisler (1987) has shown that this technique can produce a mean abundance accurate to 0.15 dex.

## II. OBSERVATIONS AND REDUCTIONS

Data were obtained on the CTIO 4m telescope during a very successful run in November 1988. We used the TI#1 chip at the prime focus and had 3 photometric nights with 1.0-1.5" seeing. Data were obtained for 35 clusters in this run alone, and our total sample now includes 16 SMC clusters and 34 LMC clusters.

The data are being reduced with the new program DOPHOT, kindly provided by P. Schechter. This program obtains the point-spread-function automatically - no user interaction is required - so that reduction time is greatly reduced over a program such as DAOPHOT. We reduced 100 frames, each with ~2000 stars, on a VAX 750 in 2 weeks! Extensive tests show that DOPHOT produces photometry as good as other programs, even in crowded fields.

An example of the type of data produced is shown in Figure 1, which is the  $T_1$  vs.  $T_1 - T_2$  color-magnitude diagram for NGC 152, an intermediate-age cluster in the SMC. Note that the

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data are still on the instrumental system -  $\sim 3$  magnitudes must be added to  $T_1$ . The giant branch is very tight and populous and should provide a very accurate mean abundance from the  $\sim 100$  giants present. Note that the data also reach several magnitudes down the main sequence (this in a total of only  $\sim 20$  minutes per cluster, i.e. 4 filters in 20 minutes total). Obviously, this data is also useful for determining ages. Appropriate isochrones are now under construction (D. VanderBerg and R. Bell, private communication). The final product should be a much better understanding of the age-metallicity relationship for the Magellanic Clouds.

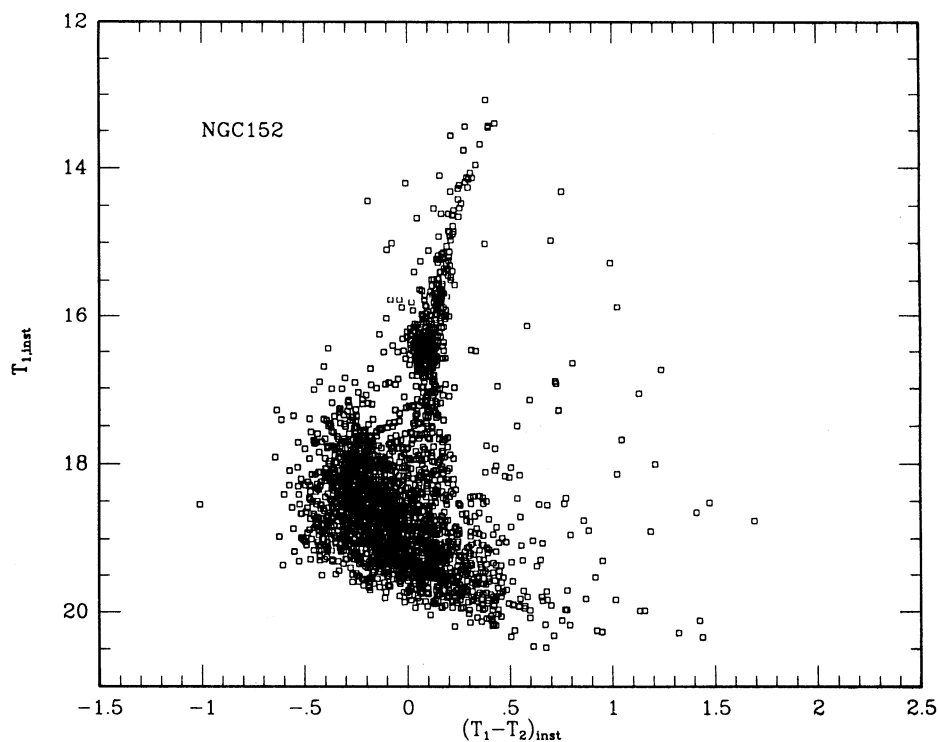


Fig. 1. The instrumental  $T_1$  vs.  $T_1-T_2$  Washington color-magnitude diagram. Add  $\sim 3$  magnitudes to  $T_1$  to put it on the standard system.

#### REFERENCES

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