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CCD PHOTOMETRY OF THE GALAXIES ESO598-G009, NGC1515 AND NGC7456

YOUNG JUN CHOI,[1] BYEONG-GON PARK,[1,2] AND TAE SEOG YOON[1]
[1]Dept. of Astronomy and Atmospheric Sciences, Kyungpook National University, Taegu, Korea
[2]Bohyunsan Optical Astronomy Observatory, Korea Astronomy Observatory,Daejon,Korea

ABSTRACT

We performed CCD surface photometry in B,V,R and I filters for three southern spiral galaxies:ESO598-G009,NGC1515 and NGC7456. Isophotal map, luminosity profile, ellipticity profile and position angle profile were obtained for these galaxies using SPIRAL package. The results show that one of the galaxies, ESO598-G009 has relatively large bulge component and changes in position angle due to spiral arms. The NGC7456 has very small bulges; and the isophotal map of the NGC1515 shows that it is a typical spiral galaxy with bar.

Key Words : surface photometry, spiral galaxies

I. INTRODUCTION

ESO598-G009 is an Sb type galaxy with apparent B magnitude as 14. It is a component of a binary system(Soares et al. 1995). NGC1515 is a highly elongated intermediate barred spiral classified as SAB(s)bc in the RC2 (de Vaucouleurs et al. 1976). Total magnitude of this galaxy is 11.83 in the RC2 and the ESO/Uppsala Survey of the ESO Atlas(Lauberts 1982). NGC7456 is a late type spiral galaxy, classified as SA(s)cd in RC2. The redshifts of the two galaxies, NGC1515 and NGC7456, are 1131 and 1206 km/s(Da Costa et al. 1991). Only luminosity profile of NGC7456 is appeared in Mathewson et al. (Mathewson et al. 1992).

In this study, we will analyze the luminosity distribution of these galaxies in B,V,R,I bands.

II. OBSERVATIONS AND REDUCTIONS

The CCD frames were taken with the 1-m reflector at the Mount Stromlo and Siding Spring Obervatory(MSSSO) in Sep. 1993. We reduced the images using the IRAF/SPIRAL package by standard CCD image processing techniques and surface photometry reduction process.

III. RESULTS AND DISCUSSION

For three galaxies, we obtained the isophotal maps(Figs. 1, in V filter), luminosity profiles(Figs. 2, in V filter), ellipticity profiles(Figs. 3) and position angle profiles(Figs. 4). By assuming de Vaucouleurs' $r^{1/4}$ - law for bulge component and exponential functin for disk, interactive profile decomposition was tried for NGC1515.

The isophotal maps of ESO598-G009 show a large nucleus and spiral arms. At $\sim 16''$ from the center of the galaxy, the luminosity profile, position angle and ellipticity changes due to spiral arms. The isophotal maps of NGC1515 show bar structure which also is seen in the position angle and ellipticity profile. Luminosity profile of NGC1515 represent that the galaxy is a typical spiral. The position angle profile of NGC1515 is constant.

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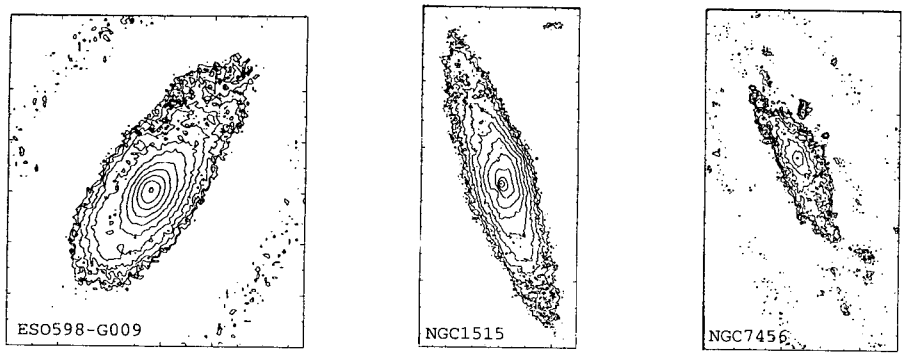

Fig.1 Isophotal maps in V filter

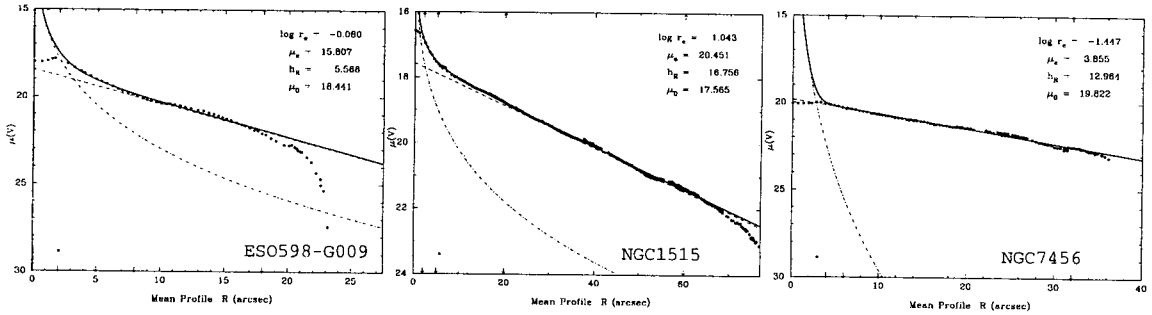

Fig.2 Luminosity profiles in V filter

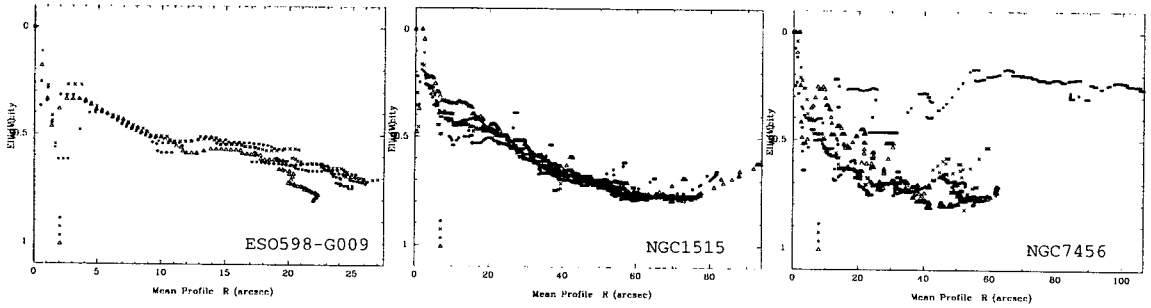

Fig.3 Elliptical profiles for all filters.

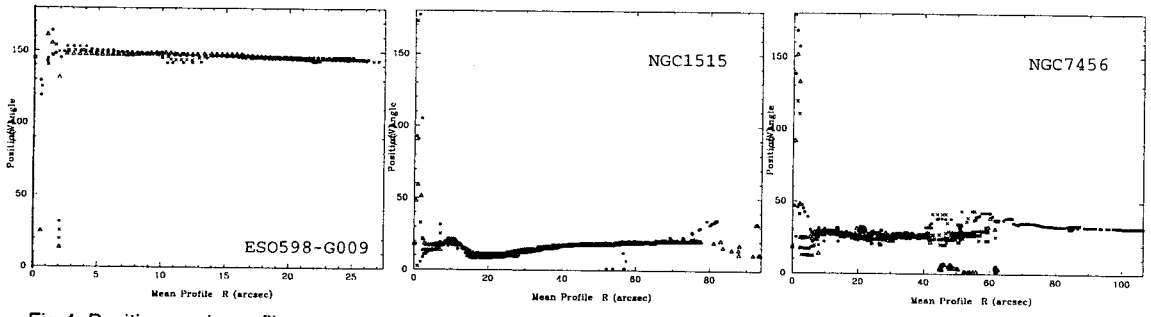

Fig.4 Position-angle profiles