INTERFEROMETRIC STUDY OF NGC 1313

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Abstract. The kinematics and structure of NGC 1313 are discussed on the basis of interferometric observations. Several uniformly rotating components, a total mass of $2 \times 10^{10}$ solar masses, and deviations from pure circular movement of an amplitude of almost $20 \text{ km s}^{-1}$ are found.

1. Introduction

Several morphological characteristics of the large barred spiral NGC 1313 make its study particularly interesting.

In this galaxy, we find that

(a) The main body: barred, with unequal spiral arms (the northern one more extensive and with larger H II regions), its nucleus located asymmetrically with respect to the bar and to the spiral structure. There is slight evidence of a secondary set of arms near the bar;

(b) The faint extensions: several large emission complexes south of the main body and an overall ellipsoidal structure of low surface brightness ($17' \times 12'$) which covers the whole galaxy (Carranza and Agüero, 1974).

All these features and the noticeable inclination of NGC 1313 suggest a complex field of movements. The purpose of this paper is to study them by observing the ionized medium in order to construct a dynamical model.

2. Observations and Reduction

The observational material consisted of four interferograms of NGC 1313 in the recombination line of the ionized hydrogen, H-$\alpha$. These radiations were selected at the Newtonian focus of the F/5, 154 cm reflector of Cordoba Observatory by means of narrow (HW 8–10 Å) interference filters and then fed into a F/1 focal reducer* with a Perot-Fabry etalon of central interference order $p=1058$ and finesse $F=10$. The average dispersion on the field in each interferogram is about $25 \text{ Å mm}^{-1}$. Table I indicates the individual characteristics of these interferograms while Plate I shows the

* This equipment was built at the Observatoire and the Laboratoire d'Astronomie Spatiale, Marseille, France.

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galaxy on them. Comparison H-α interferograms were made before and after the exposures of the sky with the same mounting and light from a hydrogen tube. All

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Plate I. Hα interferograms of NGC 1313.