

SEYFERT 1 GALAXIES IN CALAN-TOLOLO SURVEY

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I. INTRODUCTION

Four years ago we started at Cerro Calán an extension of the objective prism survey carried out at Cerro Tololo Inter-American Observatory (CTIO) by Malcolm Smith a decade ago (Smith 1975, Smith, Aguirre and Zemelman 1976). Thanks to the kindness of Dr. P.S. Osmer, then Director of CTIO, we got on loan Smith's original plate collection. Searching his plate material we learned to recognize the most prominent emission line objects. We decided then to extend Tololo's original survey to an area of the southern sky large enough to be of statistical interest but small enough so it could be carried through with our very limited facilities at Cerro Calán.

II. THE CALAN TOLOLO SURVEY

We adopted the same instrumental setup used by Malcolm Smith, that is, the Curtis-Schmidt telescope, the thin UV prism (Blanco 1974), baked unfiltered IIIaJ plates exposed to the sky limit (90 minutes reaching 18.5 magnitude). A general description of the Calán-Tololo Survey is given in Maza et al. 1988a and 1988b. Finding Seyfert galaxies in these plates is not as easy as it could seem. We have learned how to do it in a more or less reliable fashion (see Maza et al. 1988c for a discussion on how an objective prism spectrum becomes a Seyfert candidate). The first two lists of Calán-Tololo Seyfert galaxies have been sent to publication containing data for 30 and 40 new Seyfert galaxies in the southern hemisphere, respectively (List 1, Maza et al. 1988c; List 2, Maza et al. 1988d).

Our survey area covers 3,400 square degrees on the southern sky distributed in two big areas as follows:

1 Visiting Astronomer, Cerro Tololo Inter-American Observatory.
2 Visiting Astronomer, Las Campanas Observatory (CARSO).

$$\begin{aligned}
 19^h < \alpha < 6^h & \quad \text{and} \quad -47.5 < \delta < -32.5 \\
 9^h < \alpha < 16^h & \quad \text{and} \quad -27.5 < \delta < -12.5
 \end{aligned}$$

Figure 1 of List 1 gives a graphical representation of these areas as well as the nomenclature used to designate the objects.

The global statistics of List 1 and List 2 (including 70 objects) is presented in Table 1. Our survey goes 1.5 magnitude fainter than Markarian original survey. We are preparing a third list of Seyfert galaxies that shall contain 50 new objects in our survey area,

TABLE 1

$15 \leq m_{pg} \leq 17.5$
$0.0146 \leq z \leq 0.370$
$-26 \leq M_{pg} \leq -19.7$
z (average) = 0.091
z (median) = 0.068
M_{pg} (average) = -21.8
M_{pg} (median) = -21.6

increasing the total number of Seyfert 1 galaxies to 120. The surface density of Seyfert galaxies per square degree would be then ≈ 0.035 . This number is certainly a lower limit to the total number of Seyferts, because our searching technique is strongly biased toward objects with strong Balmer lines (mainly $H\beta + [OIII]$ and $H\gamma$ and/or to objects with a very strong UV excess (blue bump). We are planning a red mini-survey (covering 10% of the general area) to try to detect $H\alpha$ in emission in low redshift Seyferts and also to discover high redshift Seyferts ($0.07 \leq z \leq 0.20$) missed in our survey because $H\beta + [OIII]$ get shifted beyond the IIIaJ plate cutoff (Maza and Ruiz, 1988).

We acknowledge the Cerro Tololo Inter-American Observatory and the Las Campanas Observatory for agreements with the University of Chile that allow chilean astronomer to be guests at both observatories. This project has been partially supported by the "Departamento Técnico de Investigación, Universidad de Chile", under grants E2829.8815 and E2455-8834.

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