4) **Scientific Justification:** State concisely the background and aims of the program and how it will relate to previous work. Do not cite material from previous requests for telescope time as it is not available to reviewers. Do not include preprints or reprints since duplication for reviewers is expensive. If this is a continuing project, include a progress report, number of nights already used and now many more will be needed.

The appearance of SN 1987A has generated an unprecedented amount of interest in the general properties of supernovae Over the last 5 years or so, CTIO has established a reputation as one of the leading centers for supernova research. In addition to following SN 1987A, important data have been obtained for several other bright supernova. However, the success of this program has been limited by the relatively small number of southern supernovae discovered each year. To our knowledge, the only supernova search presently being carried out in the southern hemisphere is the visual survey of the Rev. R. Evans in Australia, which has yielded approximately 1-2 objects per year. A highly successful search program was carried out at the University of Chile's Cerro Roble Observatory between 1979-1984, but had to be terminated due to a lack of supporting funds. In this proposal, we request time to initiate a photographic search similar in concept to the Cerro Roble program, but employing instead the Curtis Schmidt telescope at CTIO.

Based on the results of the Cerro Roble search (see Maza *et al.* 1981; *Publ. A.S.P.*, **93**, 239), by monitoring a large number of fields ($\sim$60), we expect to discover approximately one supernova per month on average with $12 \leq B \leq 18$. Follow-up photometry and spectroscopy of these will be obtained with other CTIO telescopes to provide light curves and classifications where feasible. One of the specific goals of this project is to discover distant ($0.01 < z < 0.1$) type Ia supernovae in order to eventually populate the Hubble diagram for these objects at this distance range. We also plan to search for intrinsically faint supernovae like SN 1987A in clusters such as Fornax and Virgo. Finally, we expect to find 1-2 bright supernovae per year, which will be monitored in detail at optical and infrared wavelengths. For reference, in the course of the Cerro Roble search, several bright supernovae were found before reaching maximum light. Among these were the type II-P SN 1983K in NGC 4699 (Nimela *et al.* 1985; *Ap.J.*, **289**, 52, and Phillips *et al.* 1990; *Publ. A.S.P.*, in press) and the type Ia SN 1980N in Fornax A (Hamuy *et al.* 1990; in preparation).

Of the 60 fields in our list, we should be able to monitor some 40 fields at once during a given observing run. An exposure time of 20 minutes will be required in moonless sky to reach 20th magnitude. This implies that a minimum of three clear nights will be needed per observing run to properly monitor the 40 fields. Allowing for cloudy nights, we request a total of five nights of dark time per month.

The plates obtained from each night will be promptly ($\leq$24 hours) sent to Santiago to be blinked by experienced people (the same who participated in the Cerro Roble search) using the facilities of the University of Chile. Approximately 48 hours will be required to blink the entire set of 40 plates. This approach should assure the rapid discovery of any supernova recorded on the plates.

This project will require approximately 300 plates per semester. Although the current request is for IIa-O plates, we plan to experiment with alternative photographic materials such as T-MAX and radiological films with an aim to reducing costs.