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Integrated Spectral Analysis of 10 Concentrated Galactic Open Clusters

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Integrated spectra of 10 concentrated Galactic open clusters were obtained in the (3600-6800)Å range using the CASLEO (Argentina) 2.15 m telescope. The method used to determine ages and reddening of the clusters consists of the following steps: (1) Estimation of the cluster age from equivalent widths of the Balmer lines. This age is practically independent of the reddening. (2) Choice of the template whose spectral features better resemble those of the observed spectrum. This choice was made by using the libraries of template spectra which were available at the moment of making use of this methodology. In a first approach, the age inferred by the previous method was adopted. (3) Variation of the reddening of the observed spectrum until obtaining the best match to the chosen template. The reddening corrections were done using the normal reddening law. In Table 1 we show the parameters derived here, where the ages values are in Myr.

Five out of the ten studied clusters have not been the subject of previous studies so that their fundamental parameters determined turn out to be the first of their kind. For the remaining clusters, the parameters derived exhibit good agreement with those determined in previous studies.

With the exception of ESO 429-SC2, the remaining Galactic open clusters are located within two 90° sectors centered at $l = 343°$ and $l = 253°$, respectively. A comparison of the properties of the Galactic open clusters here studied to those of well-known clusters located in the above mentioned sectors, shows that, unless major star forming events had occurred in the Galactic disk in the last 100 Myr or so, the present results would favour an important dissolution rate of star clusters in the above mentioned Galactic sectors.

Keywords. techniques: spectroscopic, open clusters: general

Table 1. Reddening and age determinations

Cluster	$E(B-V)$	Age (Balmer)	Age (template match)	Adopted age
Ruprecht 2	0.10±0.01	4000	3000-4000	4000±1000
Bochum 2	0.81±0.01	<50	2-4; 5-10	5±2
ESO 429-SC2	0.30±0.01	∼10	5-10	7.5±2.5
Pismis 7	0.40±0.02	2000	3000-4000	3000±1000
Hogg 10	0.50±0.01	30	20; 40	30±10
Trumpler 21	0.20±0.01	40	20; 40	30±10
BH 151	1.70±0.02	<10	2-4	3±1
ESO 445-SC74	0.00±0.02	5000	1000; 3000-4000	2500±1000
Pismis 20	1.23±0.01	<10	2-4	3±1
Dolidze 34	0.70±0.01	700	500	600±100