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Preliminary results from an open clusters polarimetric survey

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Abstract. We present preliminary results from an Open Clusters Polarimetric Survey which is being developed at La Plata Observatory (Argentina). The aim of this Survey is to provide clues about the characteristics of the dust responsible for extinction and polarization in the light from member stars of Open Clusters, about its galactic distribution and also to confirm or reject possible memberships of clusters members. At the present stage we have studied a total of 17 Open Clusters with galactic longitudes in the 3rd. and 4th. quadrants, in the Southern Milky Way, with a range in distance of about 800-2300 pc from the Sun and a sample of about 500 observed individual stars. In each one of these clusters, we have been able to detect the presence (if any) of intracluster dust and interstellar dust on direction to the cluster, with auxiliary observations of non-member stars. Also, we got from these observations the distribution, size and efficiency of the dust grains which polarize the star light and the changing directions of the Galactic magnetic field along the line of sight to each cluster. A very important byproduct of these studies is the isolation of stars which are candidates for having an intrinsic component of polarization (with a non-interstellar origin). Special applications have been found, as for example in help discussing membership of Cepheids in some Open Clusters, or detecting the location of energetic phenomena occurred in the past history of a cluster. The principal aim of this Survey is to develop, in the near future, a new catalog containing the polarimetric parameters associated with them. Hence, this is the first polarimetric Survey devoted not to isolated stars, as in other catalogs, but to a stellar group at a certain location, immersed in a particular interstellar medium whose characteristics can be revealed through polarimetry.

Key words. ISM: dust, extinction – Galaxy: open clusters – polarization

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