CIRCULAR POLARIZATION IN SOME SMALL BODIES OF THE SOLAR SYSTEM

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Using more accurate values of standard objects and the methodology presented in our work, see "Reliable Polarimetry Standards: Methodology, Calibration and Variability", we reanalyzed the Shine telescope we obtained on a 2.6-meter reflector in the mode of simultaneous measurements of circular and linear polarization of a number of objects in the solar system for 15 years. The previously obtained results of linear polarimetry are fully confirmed. In the case of circular polarimetry results, the situation is significantly different.

We found significant circular polarization at phase angles less than 0.2 degrees (i.e., during opposition) in Jupiter's moons with a high albedo: Io, Europa, Ganymede, with a positive sign and an amplitude of 0.2-0.4%. Polarization increases synchronously for different objects with decreasing phase angle. Also, nonzero values of circular polarization of opposite signs at large phase angles were found both for these objects and for asteroids and satellites of Saturn with a large albedo. Low circular polarization of opposite signs at different phase angles has also been determined for several comets measured over more than 10 years. In this case, no dependence of the circular polarization on the phase angle was found. And the only discovered dependence can be called the fact that in small bodies circular polarization is observed simultaneously with nonzero linear polarization.

In our opinion, the detected small circular polarization of opposite signs in comets and a group of small bodies can be explained by the superposition during observations from the Earth's surface of several media with different linear polarization and / or light scattering by nonspherical dust grains in a nonspherical form. dust cloud.