AOGS 2005

An Investigation of the Light Curve of Deep Impact Target Comet

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The light curves of periodic comet 9P/Tempel 1 (this comet is target for space mission "Deep Impact") during three appearances have been constructed on the basis of about 800 visual estimations of the total brightness. These observations have been taken from archive of the International Comet Quarterly and from some Internet sources. All estimations have been corrected on the standard aperture [1]. Photometrical parameters of light curves (absolute magnitude H_0 and heliocentric power-low exponent n) have been determined with using Filonenko's method [2]. The values of H_0 and n determined by authors are presented in Table 1.

A study of the light curves of this comet shows that there were large variations in the brightness of the comet during all discussed appearances. A correlation of these variations of cometary brightness with change of the solar activity's indexes had been found. The results of study of the secular variations of cometary brightness are discussed.

Keywords: Comet; light curve; photometrical parameters; secular variation; Tempel 1; Deep Impact target.

Table 1. Photometrical parameters of light curves of comet 9P/Tempel 1 during three appearances.

Appearance	H_0	n	N
1972	$10.^m57 \pm 0.^m35$	3.00 ± 0.64	27*
1983	5.96 ± 0.28	8.82 ± 0.51	326*
1983	6.0 ± 1.4	8.4 ± 3.0	25**
1994	5.23 ± 0.19	10.41 ± 0.35	431*

Notes: N – number of observations, * - pre perihelion, ** - post perihelion.

References

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