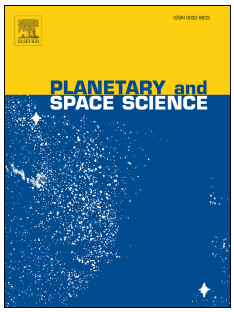
Accepted Manuscript



The activity and dynamical evolution of quasi-hilda asteroid (457175) 2008 GO98

E. García-Migani, R. Gil-Hutton

PII: S0032-0633(17)30494-4

DOI: 10.1016/j.pss.2018.03.011

Reference: PSS 4496

To appear in: *Planetary and Space Science*

Received Date: 22 December 2017

Revised Date: 7 March 2018

Accepted Date: 20 March 2018

Please cite this article as: García-Migani, E., Gil-Hutton, R., The activity and dynamical evolution of quasi-hilda asteroid (457175) 2008 GO98, *Planetary and Space Science* (2018), doi: 10.1016/j.pss.2018.03.011.

The activity and dynamical evolution of quasi-hilda asteroid (457175) 2008 GO98☆

E. García-Migani[a,*], R. Gil-Hutton[a]

[a] *Grupo de Ciencias Planetarias, Departamento de Geofísica y Astronomía, Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan - CONICET, Av. José I. de la Roza 590 (O), J5402DCS Rivadavia, San Juan, Argentina*

Abstract

The quasi-Hilda asteroid (457175) 2008 GO98 was found in a previous study as a good candidate to show cometary activity since it seems to come from the Centaurs region. The object was observed in the post-perihelion arc of its orbit during several runs between September 2016 and June 2017 with the 2.15 m telescope at Complejo Astronómico El Leoncito (CASLEO) in San Juan, Argentina. The images obtained were analyzed and the object was observed active with a small coma that grew in size and brightness as the object moved away from the perihelion of the orbit, while in June 2017 it also showed a small tail. In order to get an estimation of the diameter of the nucleus the coma contribution has been calculated and subtracted to find values of $15.5 \pm 4.0\ km$ and $20.1 \pm 5.4\ km$ for albedos of $p_R = 0.13$ and $p_R = 0.069$, respectively. To understand the recent dynamical evolution of (457175) 2008 GO98, the orbit of the object and those of 100 clones were numerically integrated backward and forward in time for $30000\ yr$. The dynamical evolution confirms that this object is a recent incomer from the outer region of the solar system but it will return to this region in a short period of time indicating that its present dynamical state is rather transient.

☆Based on observations carried out at the Complejo Astronómico El Leoncito, operated under agreement between the Consejo Nacional de Investigaciones Científicas y Técnicas de la República Argentina and the National Universities of La Plata, Córdoba, and San Juan.

*Corresponding author

Email addresses: egarciamigani@conicet.gov.ar (E. García-Migani), ricardo.gil-hutton@conicet.gov.ar (R. Gil-Hutton)