Detection of a cometary object near C/2017 O1 (ASAS-SN) in HST images

Federico Manzini (SAS - Stazione Astronomica di Sozzago, Novara, Italy), Virginio Oldani (SAS), Paolo Ochner (Uni-PD, Padua University, Italy), Luigi R. Bedin (OAPD-INAF, Padua Astronomical Observatory – National Astrophysical Institute, Italy), Andrea Reguitti (INAF)

During an analytical review program of all comet images taken by the Hubble Space Telescope (HST), F. Manzini found the presence of a second cometary object on seven images of Dec 12.01, 2017 (one orbit) covering the field of comet C/2017 O1 (ASASSN), taken with the F110W and F350LP (Figure 1 and 2) filters in the context of proposal 15406 by P.I. K. Meech (University of Hawaii).

The object appears to show a movement compatible and almost similar to that of the main nucleus of C/2017 O1, maintaining an average distance of 35.90 +/-0.04 arcsec. Deeper analyses are in progress to observe whether there is a differential movement between the two bodies.

It is likely that this second cometary body is directly linked to the main nucleus and due to a splitting or ejection following a previous outburst.

Images taken by HST in two orbits on Feb 13 and 19, 2018 with the same filters do not show other cometary objects in the field, except C/2017 O1.

C/2017 O1 (ASASSN) was first discovered by the 'All Sky Automated Survey for SuperNovae' (ASAS-SN) at Cerro Tololo, Chile on July 19.32, 2017. In the discovery images, C/2017 O1 had a V band magnitude of 15.3. ASAS-SN North unit re-observed the comet 3 days after discovery and found that C/2017 O1 brightened to V band 11.9 magnitude. (ATEL #10597).

The comet experienced an increase of >1 magnitude between July 28 and 29.

In the same period the Af(rho) value almost doubled from 218 cm to 417 cm, at a radius of 10.000 km (astronomie.be/erik.bryssinck/c2017o1_20170728.html).

Starting from mid-November 2017 the comet's brightness decreased rapidly, reaching mag 13.5-14.0 at the end of January 2018.

Figures and extra material at https://web.oapd.inaf.it/bedin/files/PAPERs_eMATERIALs/ATel/C2017O1/