POSSIBLE DISINTEGRATION OF THE NUCLEUS OF COMET C/2024 S1 (ATLAS)

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Comet C/2024 S1 was discovered by ATLAS-HKO in Hawaii on September 27, 2024. It is a sungrazing comet and is expected to become very bright at perihelion on October 28, when it will pass very close to the sun at only 0.008 AU.

A series of images of the comet taken with r and w filters on October 8 (r=0.802 AU) with the 1-m LCO telescope at the South African Astronomical Observatory in the context of the FTPEPO2014A-004 proposal and publicly released, were difficult to align and stack due to a lack of condensation of the nucleus, which appeared elongated and fainting compared to images taken with the 1-m telescope at Siding Spring on October 3 (r=0.921 AU), when it was still identifiable. This finding suggests a possible fragmentation of the nucleus.

Despite the comet was still at a relatively “safe” distance from the Sun it is possible that strong vaporization of a large amount of gas occurred which, together with the tidal or rotational forces acting on the comet’s nucleus may have led to its fragmentation.

Figures are available at:

https://web.oapd.inaf.it/bedin/files/PAPERs_eMATERIALs/ATel/ C2024S1/