

On [January 14th](#), I observed an occultation of the magnitude 12.96 star UCAC4 558-046959 by (10424) Gaillard from Starkville, MS (USA). OccultWatcher predicted a magnitude drop of 5.0, for a maximum of 0.7 seconds and a probability of occultation of 76.6%. My observing site was 1 km South of the centerline. Direct link to the event: <https://cloud.occultwatcher.net/event/1108-10424-123667-649350-U046959>

I had the surprise to observe a double occultation of 0.449 and 0.266 seconds, separated by 0.312 seconds. The magnitude drop (in excess of 2 magnitudes, although difficult to quantify precisely because the signal gets to the level of the background noise during the occultation) is not compatible with a binary star, leaving me with the conclusion that (10424) Gaillard is a binary asteroid.

I have published a detailed analysis of this observation here: <https://jfgout.github.io/occultations/gaillard-20240114.html> and would love to have some feedback on this unusual observation. The original video (.ser file) is also available for download here: https://mstate-my.sharepoint.com/:f/g/personal/jg2776_msstate_edu/EisSzsCcz1FuF-mcJPx5CkBr017v15A1jH8SZqW1Y3vUg?e=DyjeSq if anyone wants to perform their own analysis.

The observation was done with an 11-inch SCT telescope (C11 edgehd) at F/1.9 (Hyperstar V4) with an ASI533MM CMOS camera (sampling = 1.44" per pixel) and a shutter speed of 90ms (gain = 95%).

A small section of the light curve is also attached to this email.

Please, let me know if you find any flaw in my analysis. I'm excited about the possibility of having observed a binary asteroid but want to make sure that I'm not making an erroneous claim.

Finally, I would like to encourage observers to attempt future occultations by (10424) Gaillard. There will be a good one (star of magnitude 11.0) coming on [March 26th](#) ([March 25th](#) in the evening for the US) for areas of southern Florida, Louisiana (near New Orleans) and possibly Texas at dusk: <https://cloud.occultwatcher.net/event/1180-10424-114080-649395-T00161-1#>

Clear skies,

Jean-Francois (Jeff / JF) Gout