



LSST has updated this statement. [Click here](#) to read the updated statement.

June 4th 2019

LSST statement regarding increased deployment of satellite constellations

As an astronomical survey that depends on dark skies for its core science, LSST is concerned about plans for the large-scale deployment of satellite constellations. Starlink may be only the first in a series of new technologies that could impact ground based astronomy. We believe that the design and implementation of these constellations should be undertaken in consultation with the astronomical community to minimize their impact.

In general, satellite trails should not be a challenge for LSST due to its specific design. LSST's frequent imaging of the same region of sky will be a strength, providing enough uncontaminated images to reject the images that contain satellite trails or other anomalies.

Dr. Yusra AlSayyad, Princeton University, the LSST Science Pipelines Deputy Manager and an expert on rejection algorithms for satellite trails, explains that LSST data processing pipelines already assume that every pixel/object will be contaminated in at least one of the images—referred to as visits—that covers a given region of sky. After the LSST survey gets to the point where there are at least three visits covering each region, the artifact rejection algorithm will be able to remove them during the image co-addition step (a process by which multiple images of the same region are combined into a single composite image). For this reason, each object will be measured using only the visits in which it is unaffected by artifacts such as satellites.

In case of Starlink satellites, approximate calculations show that LSST images would, on average, contain about one satellite trail per visit for an hour or two after sunset and before sunrise. A very conservative upper limit on the number of LSST pixels affected by Starlink satellites is about 0.01%, and quite likely significantly smaller. Therefore, for LSST, Starlink satellites will be a nuisance rather than a real problem.

We emphasize that the impact of satellite constellations on other telescopes that have wider fields, longer exposures, and/or less sophisticated data processing pipelines may be much more significant. For a discussion of broader impact of satellites on research in astronomy, please see a statement on satellite constellations by the International Astronomical Union, which LSST fully endorses, at <https://www.iau.org/news/announcements/detail/ann19035/>

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