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RAPID RESPONSE TO A DEBRIS-GENERATING EVENT: THE BREAKUP OF COSMOS 1408

Abstract

The breakup of Cosmos 1408 generated a large debris cloud that is of concern due to the high density of objects in low Earth orbit. In the days after the breakup LeoLabs responded by increasing the tracking priority of the debris cloud core on our space radar network to collect additional data. Analysis of the data confirmed that the debris cloud is highly asymmetric with a majority of the objects in higher orbits. This information allowed us to build an assessment of the collision risk for satellites in low Earth orbit. Our initial assessment was published less than three days after the event, and within five days LeoLabs developed and deployed a tracking mode specifically to monitor the debris cloud without putting undue stress on the catalog maintenance operations of LeoLabs radar network. This event highlights LeoLabs ability to rapidly respond to debris-generating events and produce actionable information for the space community. LeoLabs is continuing to analyze the data from Cosmos 1408 and will update our findings as new information becomes available. In this paper we provide a timeline of LeoLabs response and highlight the development of tools that will enable the rapid characterization of debris clouds in the future.