

SPACE DEBRIS SYMPOSIUM (A6)  
Measurements (1)

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ISON SPACE DEBRIS DETECTION PIPELINE: RECENT DEVELOPMENTS

**Abstract**

Ground-based optical measurements remain the most comprehensive and reliable source of high-orbit space debris data. International Scientific Optical Network (ISON) collaboration, a joint effort of several dozens optical facilities spread over the globe and coordinated by Keldysh Institute for Applied Mathematics (KIAM), provides millions of measurements for the various classes of medium- and high-orbit space objects per year. The range of instruments scales from 0.2 meter wide-field survey sensors to 2 meter class telescopes for tracking faint debris. An important part of each sensor is the software for real-time detection of space objects.

Each ISON facility is driven by a common image acquisition and space object detection pipeline based on the Apex II astronomical image analysis platform. 10 years of successful operation made the pipeline mature and stable, and most of the recent developments are aimed at further increasing its sensitivity and reliability, in particular for faint space debris observations. Here we concentrate on such developments, including an improved moving object detection algorithm and a new method for increasing signal-to-noise ratio involving grayscale morphology.