1st Conference on Space Science and Technology in Serbia, May 12-15, 2026, Niš, Serbia
Book of Abstracts, Eds L. Č. Popović and M. Stojanović
Astronomical Observatory, Belgrade, Special Issues No. 4

https://doi.org/10.69646/1csst35

TESTING OF X-RAY DETECTION IN TURBULENT FLOW FOR SPACE APPLICATIONS USING SILICON DRIFT DETECTOR

IGOR PLANJANIN[1], MILAN STOJANOVIĆ[1] and IVAN KOKIĆ[2]

[1] Astronomical Observatory, Research Unit for Space Science and Technologies, Volgina 7, 11000 Belgrade, Serbia, iplanjanin@aob.rs
[2] Institute Mihajlo Pupin d.o.o., Volgina 15, 11060 Belgrade, Serbia, ivankokic@hotmail.com

ABSTRACT

Silicon Drift Detectors (SDD) are widely used in space missions for their high energy resolution and compact design, particularly in X-ray and particle spectroscopy. The performance of X-ray detectors in low Earth orbits (LEO) is influenced by environmental conditions. In this context, testing of such detector is required in controlled laboratory, simulating suitable conditions. While these detectors are not directly intended to measure fluid dynamics, environmental conditions encountered in LEO – including rarefied atmospheric gases and localized, quasi-turbulent flows – can cause thermal instability, mechanical disalignment, and influence on data accuracy. This paper presents laboratory testing of X-ray detection, simulating transitional and low-intensity turbulent flow conditions representative of those experienced by satellites in LEO.