

ABSTRACT ONLY

THE ASTROMETRIC LESSONS OF GAIA-GBOT EXPERIMENT

TALK REQUESTED

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Since the beginning of the Gaia mission, to ensure the full capabilities of the Gaia's measurements, a programme of daily observations with Earth-based telescopes of the satellite itself - called "Ground Based Optical Tracking" (GBOT) - was implemented [1].

These observations are carried out mainly with two facilities: the VLT Survey Telescope (ESO's VST) at the Cerro Paranal in Chile and the Liverpool Telescope on the Canary Island of La Palma.

The constraint of 0.02 second of arc on the tracking astrometric quality and the fact that Gaia is a faint and relatively fast moving target (its magnitude in red is around 21 and its apparent speed around 0.04"/s), lead us to rigorously analyse the reachable astrometric precision for CCD observations of this kind of celestial objects.

We present here the main results of this study which uses the Cramér-Rao lower bound to characterize the precision limit for the PSF center when drifting in the CCD-frame. This work extends earlier studies dealing with one-dimensional detectors and stationary sources [2,3] firstly to the case of standard two-dimensional CCD sensors, and then, to moving sources.

[1] Altmann, M. et al., 2014, in SPIE, 9149, 15.

[2] Mendez, R. A. et al., 2013, in PASP, 125, 580.

[3] Mendez, R. A. et al., 2014, in PASP, 126, 798.

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