Chapter 24

Status of the Gaia Mission

François Mignard

Abstract In December 2013, ESA successfully launched the Gaia satellite to survey our Galaxy with astrometry, photometry and spectroscopy. The main goal is to investigate the formation and evolution of the Milky Way through the kinematics and physics of its stars. Astrometry of point sources (stars, quasars) is the core of the mission and will lead to positions, proper motions and distances to an unprecedented accuracy down to 20.5 mag for more than 1 billion sources.

I will explain how the instruments on board can achieve this ambitious goal with a scanning satellite and how it depends heavily on a demanding time metrology based on the continuous operation of a Rb clock on board and its daily correlation to ground-based timescale.

I will report on the actual performances seen after the first exploitations and focus on the importance of Gaia for the realisation of the Celestial Reference Frame and its future implication to monitor the Earth's rotation.

Keywords Astrometry • Reference frame • Milky Way • Time synchronisation

F. Mignard (✉)

Observatoire de la Côte d'Azur, Bld de l'Observatoire, Nice 06304, France

e-mail: francois.mignard@oca.eu