

DIVA – A SMALL SATELLITE FOR GLOBAL ASTROMETRY AND PHOTOMETRY

S. RÖSER¹, U. BASTIAN¹, K.S. DE BOER², E. HØG³, E. SCHILBACH⁴

¹ *Astronomisches Rechen-Institut, Heidelberg*

² *Sternwarte Universität Bonn*

³ *Copenhagen University Observatory, Copenhagen*

⁴ *Astrophysikalisches Institut Potsdam*

AND

CH. DE VEGT⁵, S. WAGNER⁶

⁵ *Hamburger Sternwarte, Hamburg*

⁶ *Landessternwarte Heidelberg*

DIVA (Double Interferometer for Visual Astrometry) is a Fizeau interferometer on a small satellite. It will perform astrometric and photometric observations of at least 4 million stars. A launch in 2002 and a minimum mission length of 24 months are aimed at. A detailed description of the experiment can be obtained from the DIVA homepage at <http://www.aip.de:8080/~dso/diva>. An overview is given by Röser *et al.*, 1997.

The limiting magnitude of DIVA is about $V = 15$ for spectral types earlier than M0, but drops to about $V = 17.5$ for stars later than M5. Table 1 gives a short overview on DIVA's performance. DIVA will carry out a sky survey complete to $V = 12.5$. For the first time this survey will comprise

TABLE 1. Astrometric and photometric performance of DIVA after two years of mission. The photometric accuracy is given for 8 photometric bands in the range from 400 to 1000nm.

V (mag)	$\sigma_{\alpha,\delta,\pi}$ (mas)	$\sigma_{\mu,\delta}$ (mas/y)	σ_{phot} (milli-mag)
≤ 8	0.15	0.2	1 - 3
10	0.35	0.5	3 - 8
12	1.1	1.5	7 - 25

precise photometry in at least 8 bands in the wavelength range from 400 to 1000 nm.

DIVA will improve parallaxes by a factor of 3 compared to Hipparcos; proper motions by at least a factor of 2 and, in combination with the Hipparcos observations, by a factor of 10 for Hipparcos stars. At least 30 times as many stars as Hipparcos will be observed, and doing this DIVA will fill the gap in observations between Hipparcos and GAIA. DIVA's combined astrometric and photometric measurements of high precision will have important impacts on astronomy and astrophysics in the next decade.

References

Röser, S., Bastian, U., de Boer, K.S., Høg, E., Röser, H.P., Schalinski, C., Schilbach, E., de Vegt, Ch., sWagner, S. (1997) DIVA - Towards Microarcsecond Global Astrometry, *ESA-SP-402*, (in press)