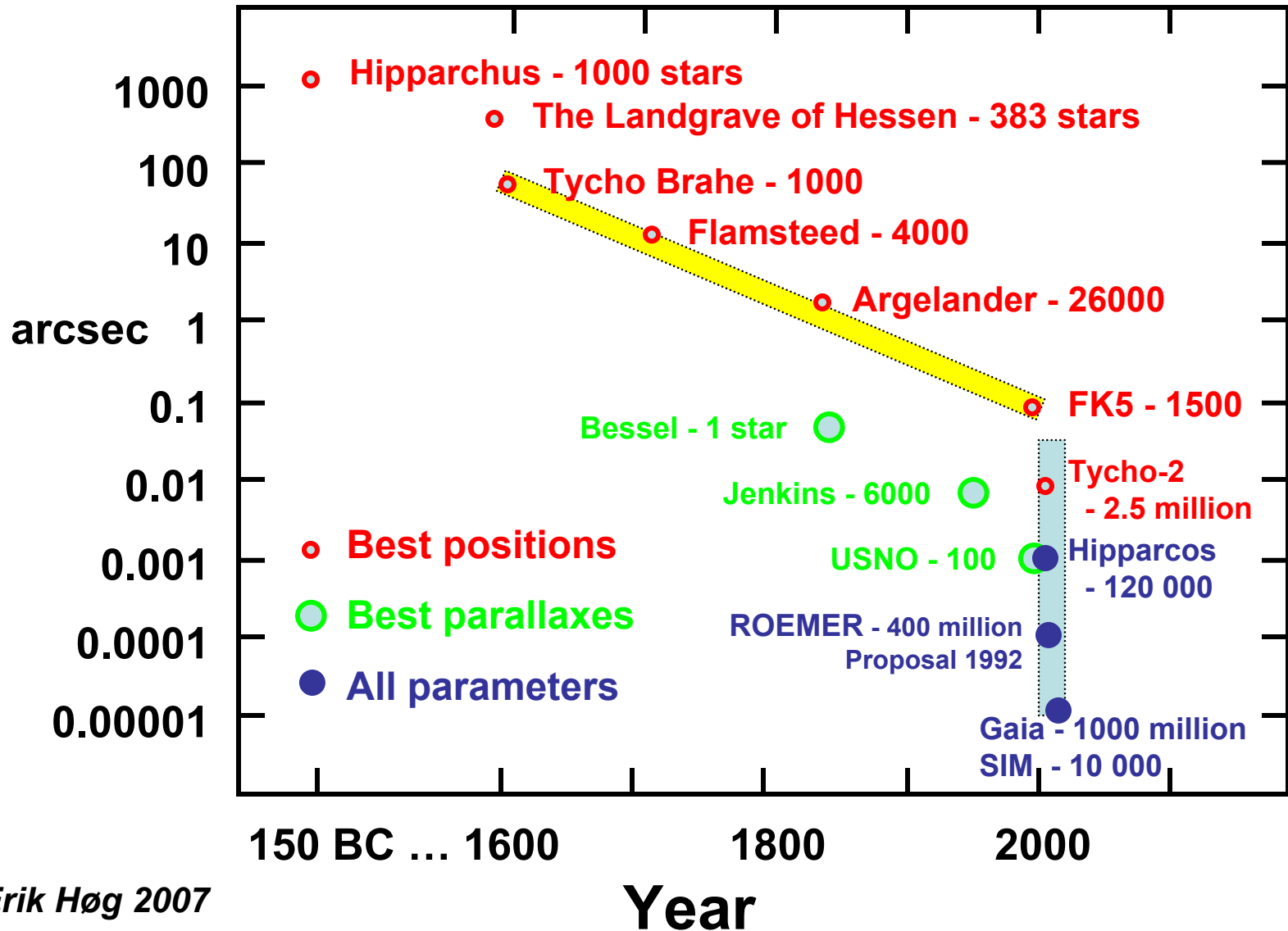


# From the Roemer mission to Gaia

by Erik Høg, Copenhagen

- *August 1989: Hipparcos launched*
- *1990-91 dialogue with Russian colleagues*
- *Proposal 1992 at IAU Symposium in Shanghai:*
  - Satellite in scanning mode with CCDs*
  - Direct imaging for astrometry and photometry*
  - 0.1 mas at 12 mag from a 5 year mission*
- *Roemer proposal for ESA M3 mission in 1993*
- *Later enhancements: 0.01 mas mission goal; Input catalogue dropped; Interferometry studied and dropped; radial velocities added; Prism photometry instead of filters.*
- *Other missions: SIM, DIVA, FAME*
- *Get the 6-page poster at [www.astro.ku.dk/~erik](http://www.astro.ku.dk/~erik) in the section Gaia*

# Astrometric Accuracy versus Time

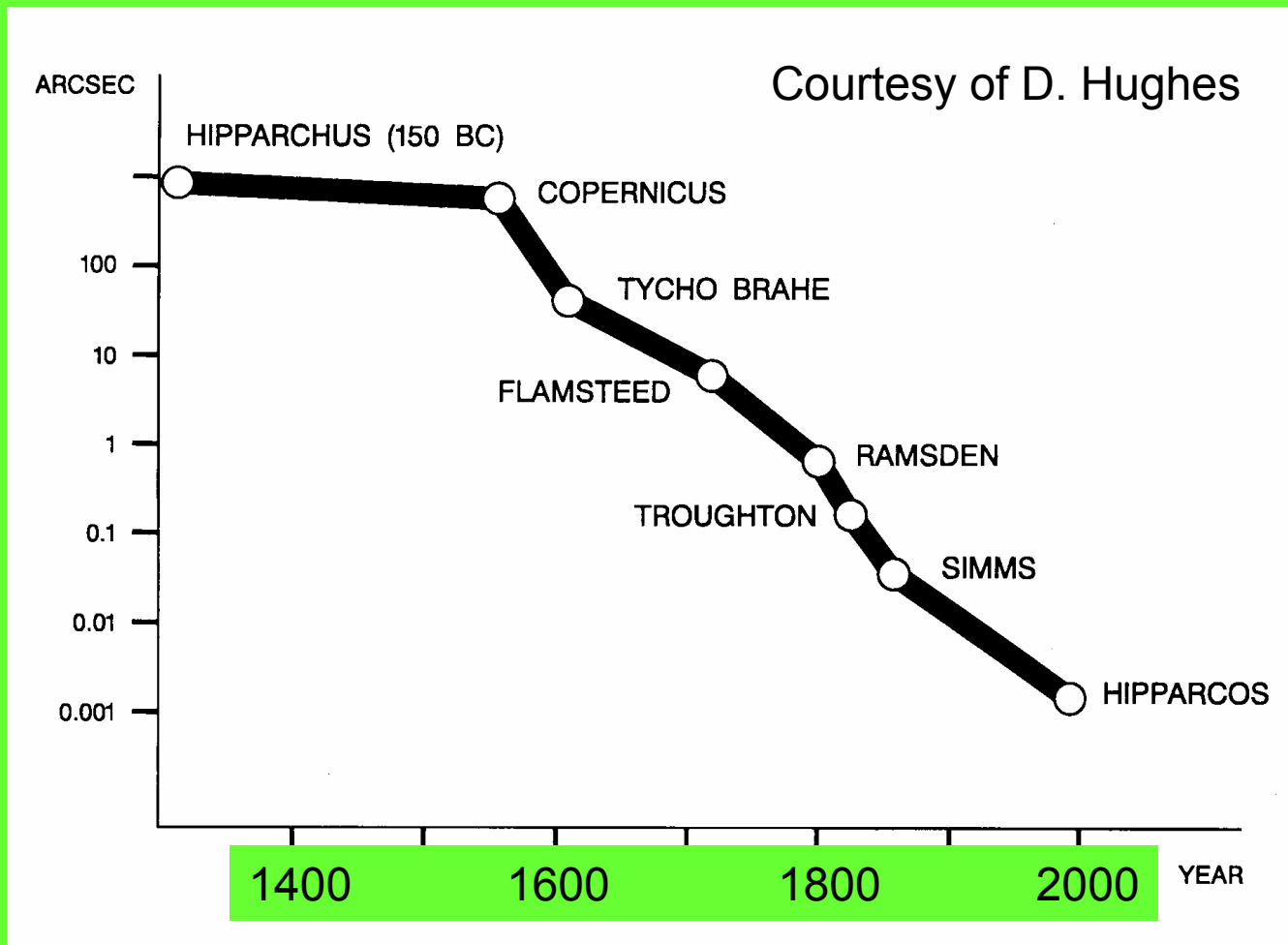


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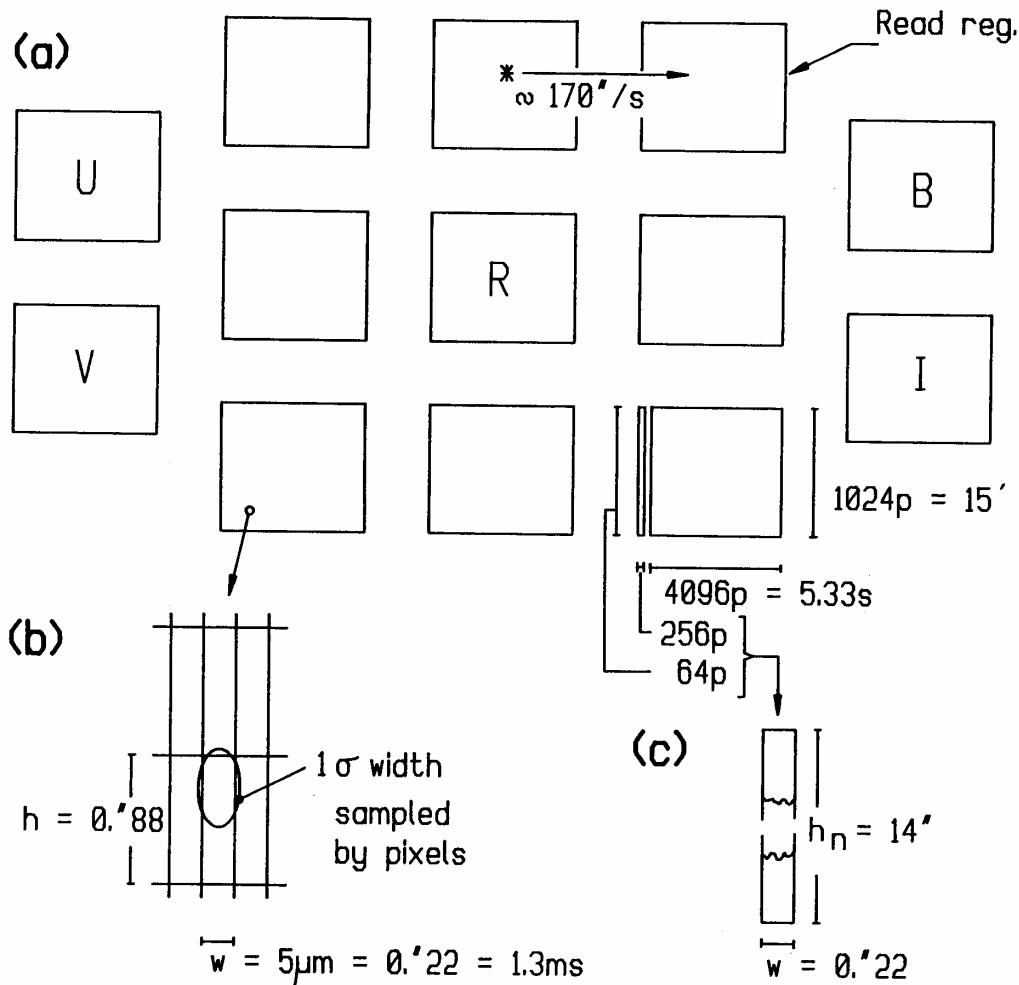
Originally 1995

# Astrometric accuracy versus time

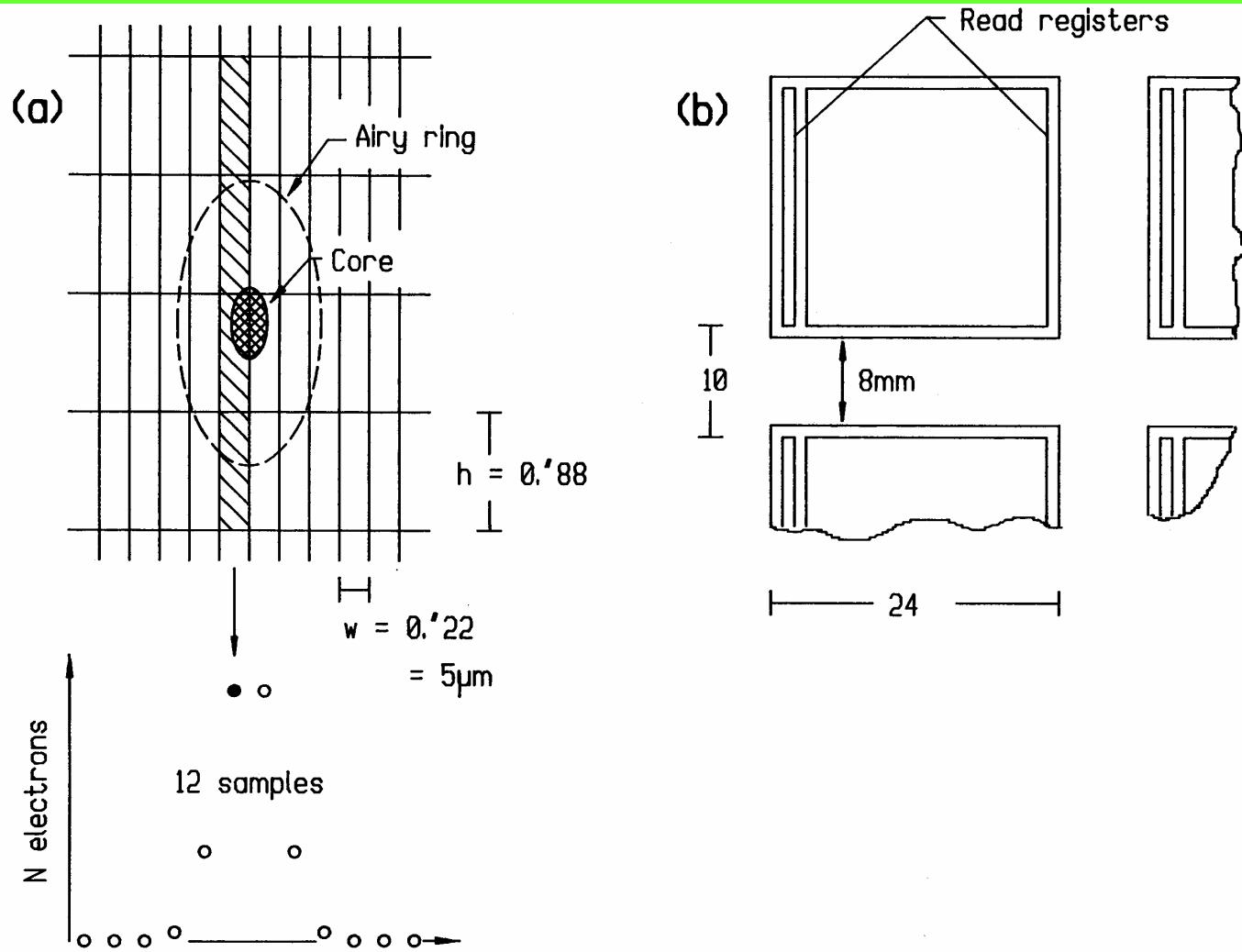
as shown in a [book on Hipparcos 1989](#) : ESA-SP1111



# Fig. 1. Focal plane of Roemer



# Fig. 2. The sampling and the chips



# Fig. 3. Optical system with two telescopes

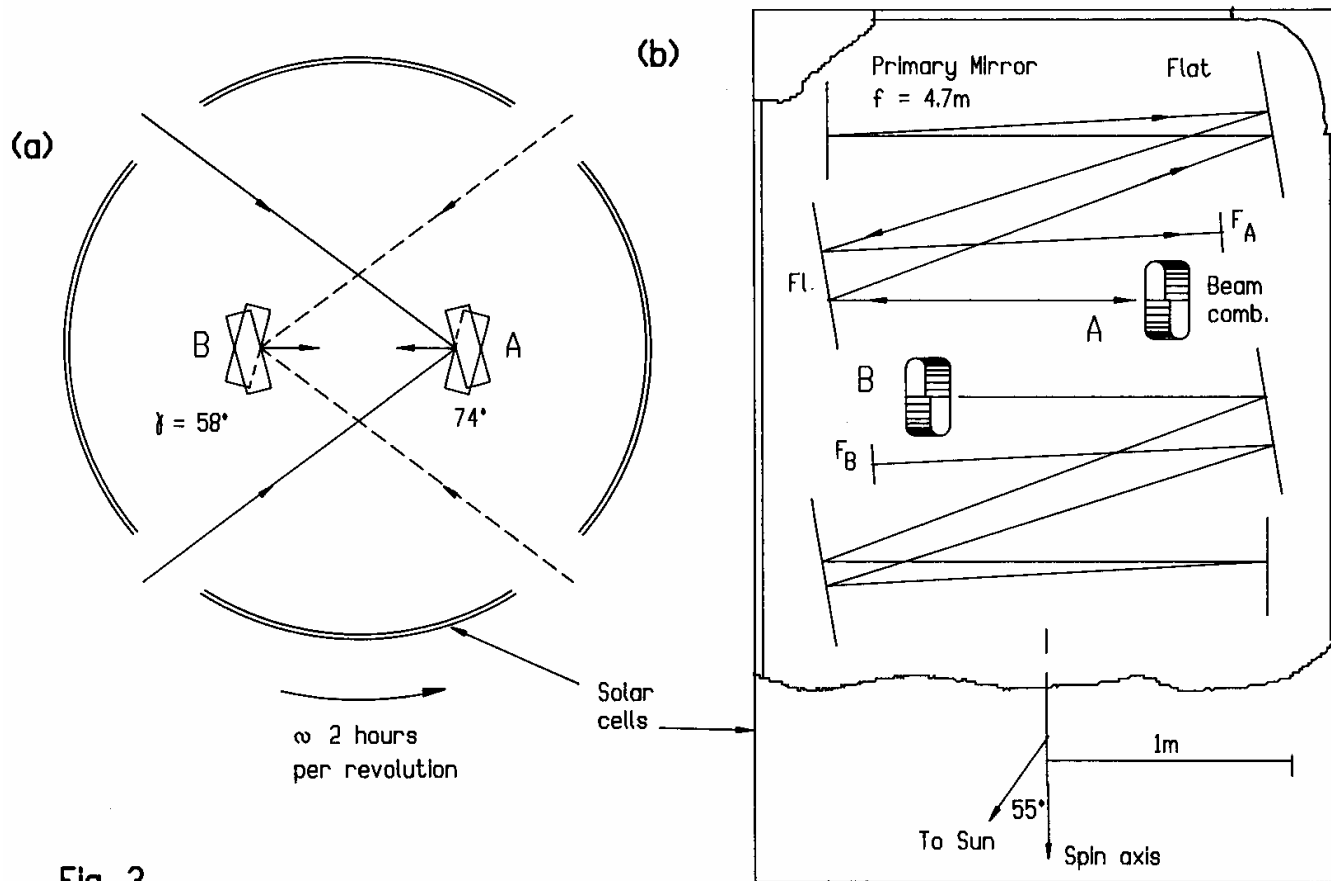
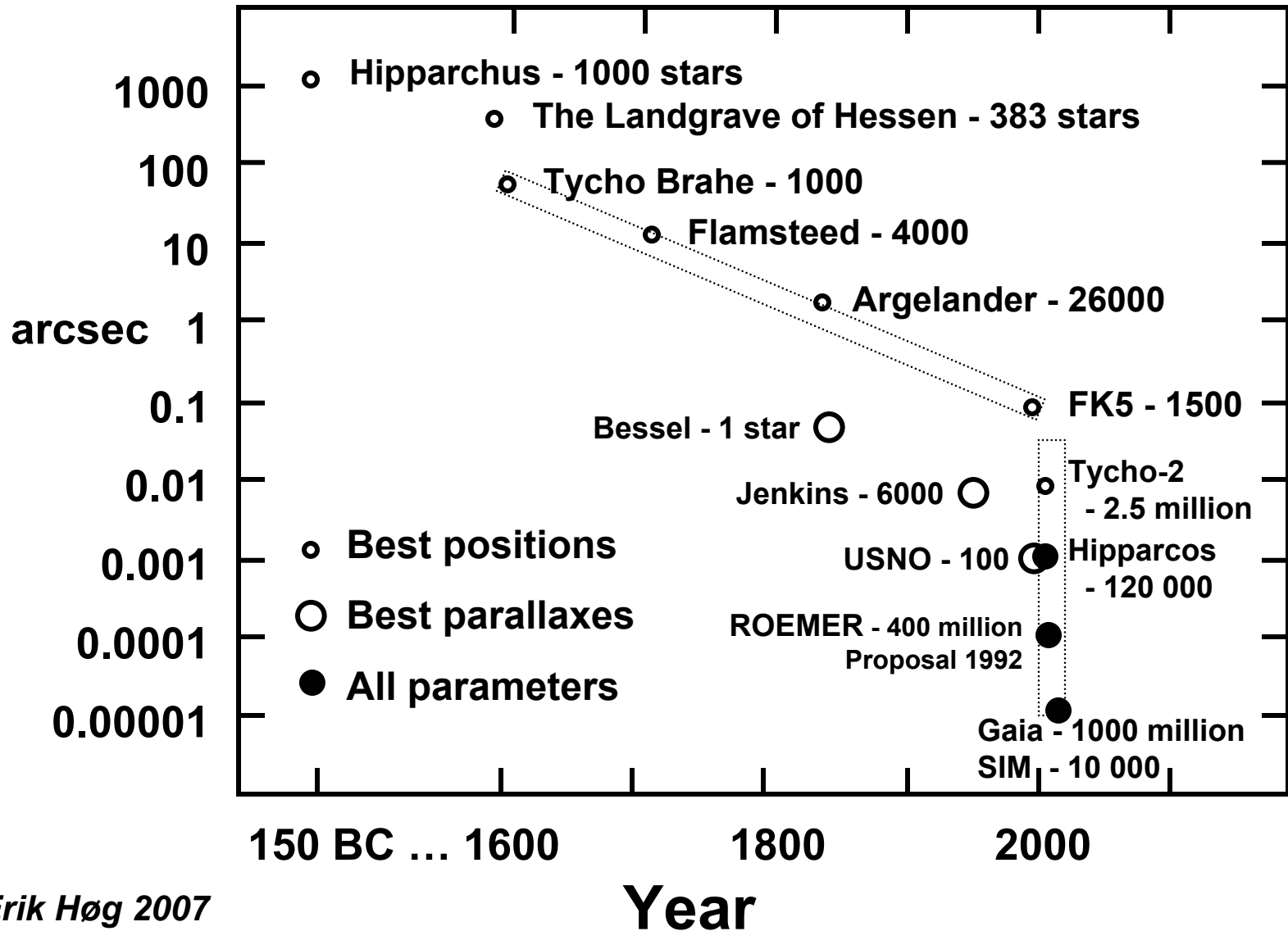


Fig. 3

Table 1. Predicted mean errors in astrometry and photometry for a 5 year Roemer mission. Columns 3 and 4 give errors for parallax and annual proper motions in milli-arcsec (mas), but asymptotic errors should be added as discussed in the text. Photometric errors are given for the *W* band from 300-950 nm, and for the five standard colours for stars of spectral type G0. Assumptions: Two beam combiner telescopes of 0.29 m aperture using 13 CCD chips in each focal plane.

<i>V</i> mag	Astrometry		Photometry ( <i>W</i> = Wide band)					<i>R</i> mag	<i>I</i> mag
	par. mas	p.m. mas	<i>W</i> mag	<i>U</i> mag	<i>B</i> mag	<i>V</i> mag			
10	0.02	0.01	0.000	0.003	0.001	0.001	0.001	0.001	
11	0.03	0.01	0.000	0.005	0.002	0.001	0.001	0.001	
12	0.05	0.02	0.000	0.008	0.003	0.002	0.002	0.002	
13	0.07	0.04	0.001	0.013	0.004	0.004	0.004	0.004	
14	0.12	0.06	0.001	0.021	0.007	0.006	0.006	0.006	
15	0.19	0.10	0.002	0.036	0.011	0.010	0.009	0.010	
16	0.31	0.16	0.003	0.067	0.018	0.016	0.015	0.016	
17	0.54	0.27	0.004	0.135	0.032	0.029	0.027	0.028	
18	0.99	0.50	0.009	0.302	0.064	0.056	0.052	0.055	
19	1.96	0.98	0.018	—	0.137	0.121	0.112	0.119	

# Astrometric Accuracy versus Time



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Originally 1995