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with a link to the newest paper on a *Gaia Successor with International Participation*

The road from meridian circles to Gaia and beyond

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Abstract: The enormous development of astrometry in the years since 1925 is the subject, astrometry being the branch of astronomy for high-accuracy measurement of stellar positions, distances and motions. -- As student of 21 years in 1953 I began to work at the new meridian circle at Brorfelde located 50 km from Copenhagen. I became fascinated by the instrument and saw the great importance of astrometry for astronomy and astrophysics. As a stipendiary in Hamburg, I proposed in 1960 a new method of astrometry by photon counting, using a photo-multiplier as detector and the then novel electronic computers for data reduction. The idea fitted well with plans for an expedition with the Hamburg meridian circle to Perth in Western Australia and we implemented the new method 1960-67 on the instrument. -- The new method was adopted by Pierre Lacroute in France in his design 1964-74 of a scanning satellite. Pierre Lacroute became the father of space astrometry. - In 1975 ESA began a study of this idea where I became involved and I have been able to contribute to space astrometry since then. The study led to the first satellite for space astrometry, Hipparcos, launched in 1989 on a three year mission and it became a great success. In 2013 a new astrometric satellite, Gaia, was launched by ESA and the first results have now shown, as was expected, that it is a million times more powerful than Hipparcos. Plans for a Gaia successor with Near Infrared capabilities, GaiaNIR, for launch about 2035 have been worked out with partners in Europe, USA, Japan and Australia. We have proposed to ESA in Hobbs+2019 [arXiv:1907.12535](https://arxiv.org/abs/1907.12535) that GaiaNIR be studied.

Abstract for a seminar at the Paris Observatory on 18 May 2020.

For master's students of Space Engineering at TU Berlin on 30 January 2020.

Later on for engineers in Stuttgart, for Latin-American astronomers at their annual meeting in Bogota, and for astronomers in Denmark somewhere.

Although the talk was originally intended for the astronomers at the annual meeting 2019 of the Astronomische Gesellschaft it seems suited also for physicists and engineers.

An alternative abstract: The presentation shows how a fundamental and 2000 years old branch of astronomy, the measurement of positions of stars on the sky, astrometry, was revolutionized during the past one hundred years. -- This modern development of astrometry began with the application of electronic and digital techniques on the ground at three meridian circle telescopes, at first in Denmark in Copenhagen and at Brorfelde and then in Germany at Hamburg-Bergedorf. The development was continued with space technology in the two large ESA satellites Hipparcos and Gaia launched in respectively 1989 and 2013. First results from Gaia for 1.5 billion stars were published in 2018 and so far 2600 refereed papers from all branches of astronomy and astrophysics have been published since launch. -- The presentation was given on 17 September 2019 in Stuttgart at the annual meeting of the Astronomische Gesellschaft when the instrument development prize 2019 was awarded to three key persons Lennart Lindegren, Erik Høg, and Michael Perryman:

<http://www.astro.ku.dk/~erik/xx/InstrumentPrize2019Award.pdf> .

Høg, E., Hobbs, D. 2019, **Gaia Successor with International Participation**. Five pages submitted to the proceedings of the symposium *Journées 2019* in Paris on Oct. 7-9 at <http://www.astro.ku.dk/~erik/xx/GaiaSucc2019.pdf>

Available also in a poster presented in Stuttgart and Paris: <http://www.astro.ku.dk/~erik/xx/PosterA2019Abstr.pdf>