Ninth NDAC Report from Lund Observatory

WP6000-7000 Step 2/3 (S. Söderhjelm, L. Lindegren)

A program giving simulated input data (abscissae) to Step 2/3 has been written, using the nominal scanning-law and a random star-catalogue. The catalogue gives a realistic distribution of bright stars (m<9) with reasonable distributions for the astrometric parameters. Parallaxes and proper motions are rigorously taken into account, producing true (coordinate) abscissae which are then degraded by a magnitude-dependent observational error. Methods suitable for sorting these set-wise abscissae into the star-wise order required for Step 2/3 have been studied, and no problems are foreseen.

Subroutines for handling and solving normal equations stored on disk have been developed and tested. Solution of the blocked normals (on a small scale) requires very little extra system time compared to a solution entirely in primary memory. Routines for setting up the Step 2/3 normals are in progress.

WP8000 Double Stars (S. Söderhjelm)

A statistical model for the binaries in the solar neighborhood has been constructed (C ), which allows some conclusions with respect to HIPPARCOS. For example, some 500 unresolved binaries should be detectable by their non-linear orbital motion, while 5-10000 may have an undetected (orbital) proper motion bias larger than 2 mas/year. The period-distribution for the resolved binaries is also obtained, and for the closest pairs orbital motion must be taken into account.

Working papers

C Lindegren 1984-06-08: Subroutine EARTH - calculation of barycentric position and velocity

C Lindegren 1984-06-15: Subroutine SUN - calculation of the barycentric position of the sun

C Lindegren 1984-06-17: Review of the Set Solution (NDAC/LO/037)
C Lindegren 1984-06-23: Covariance of IDT Signal Parameters with different weightings (NDAC/LO/038)

C Söderhjelm 1984-06-28: Statistical Models for HIPPARCOS Binaries (NDAC/LO/039)

C Lindegren 1984-06-29: Calibration of Star Mapper Distortion (NDAC/LO/040)

C Lindegren 1984-06-30: NDAC Process Diagram (NDAC/LO/041)

C Lindegren 1984-07-03: Light-time effects and the modelling of stellar proper motion (NDAC/LO/042)

C Lindegren 1984-07-17: Review of the Attitude Reconstitution and SMS Update (NDAC/LO/043)

C Lindegren 1984-07-27: Subroutines for Calculating Proper Direction (NDAC/LO/044)