## CONTENTS, TEST RESULTS, AND DATA AVAILABILITY FOR GSC 1.2

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### 1. Introduction

A collaboration between STScI and ARI has produced a new astrometric reduction of the Guide Star Catalog (GSC, Lasker *et al.* 1990). This new version, GSC 1.2, has dramatically reduced the systematic errors present in GSC 1.1. The positions in GSC 1.1 are affected by plate-based systematic distortions which are largest at the plate edges ($1.0''$, north; $1.2''$, south) (Taff *et al.* 1990a). These positions also suffer from systematic errors which are a function of magnitude and radial distance from the plate center (Morrison *et al.* 1996). This effect is small for radii under $2.7^\circ$ from the plate center, then rapidly increases producing an average offset of the faint stars ($15^{\mathrm{m}}$) versus the reference stars ($10^{\mathrm{m}}$) of $0.9''$ at the plate edges.

### 2. New Reduction: GSC1.2

Using the filter method (Röser *et al.* 1995) GSC 1.1 was placed onto the PPM system. The mean of the plate-based distortions were removed with a mask technique (Taff *et al.* 1990b) using the Astrographic Catalogue (AC) as the reference material. The AC was also used to remove the radial magnitude dependent systematic errors. (Morrison and Röser in this volume).

Table 1 shows the comparison between the GSC1.2, PPM and Carlsberg Meridian Catalogue (CMC). Note, these values are influenced by the rms error of the PPM and the unknown proper motions in the CMC. Figure 1 shows the rms differences in both coordinates derived from different (overlapping) plates, averaged over all overlapping plate pairs for the $-30°$ zone. The improvement with respect to GSC 1.1 is dramatic.

TABLE 1. RMS Results for GSC 1.2

| Version | PPM ($V \geq 8$) ra cos(dec) | dec | CMC (V $\geq$ 8) ra cos(dec) | dec |
|---|---|---|---|---|
| GSC 1.1 | $0.65''$ | $0.53''$ | $0.57''$ | $0.54''$ |
| GSC 1.2 | $0.31''$ | $0.31''$ | $0.40''$ | $0.40''$ |

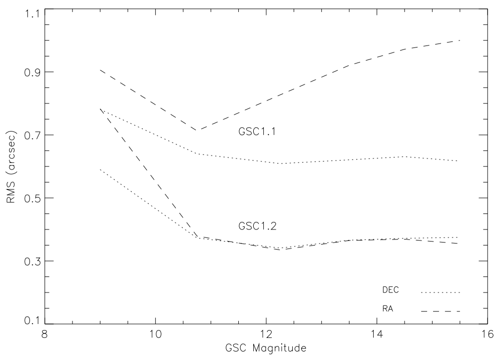


*Figure 1.* RMS-differences of GSC coordinates measured on overlapping plates

This new reduction has, on the average, eliminated the major systematics errors found in GSC 1.1. The astrometric data of GSC 1.2 are available on the web. The overall accuracy of the positions in GSC 1.2 is better than $0.3''$. A few caveats on GSC 1.2 are: (1) it is on the PPM not the HIPPARCOS system, (2) it is not compatible with ST ScI Digitized Sky Surveys, and (3) at present *it must not be used for HST observation planning.*

## References

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