

[Next](#) | [Up](#) | [Previous](#)

Next: [Introduction](#)

VLA Scientific Memorandum 175: Should CS Entirely Replace C Configuration?

Michael P. Rupen
National Radio Astronomy Observatory
Socorro, NM 87801
18 September 1998

Abstract:

Previous work has shown that, compared to the standard C configuration, the additional short spacings provided by CS configuration yield superior images of large structures. However, the corresponding loss of intermediate baselines degrades the quality of imaging for some traditional single-configuration observations, particularly for snapshots and when additional antennas are out of the array due to other causes (maintenance, VLBI observations, or simple failures). This degradation is apparent both in plots of the uv-coverage, and (more directly) in simulated observations of complex sources. A variant of CS configuration involving the relocation of only a single antenna would fill in the central uv 'hole' while maintaining good intermediate coverage; however, such a configuration would effectively return to the standard C configuration whenever that antenna was down. One approach would be to guarantee D configuration make-up time to observations which required CS but lost that inner station. Another alternative would be to move two antennas to the inside, but allow only a single antenna (rather than the current three) to be removed from the array before taking action to restore the missing antennas. Both of these options present practical difficulties.

- Introduction
- UV-Coverage and Point-Spread Functions
 - C vs. CS Configuration
 - Combining CS with Larger Configurations
 - Alternatives to the Current CS Configuration
 - Conclusions

- Simulations
 - The Simulations Themselves
 - Measuring the Image Quality
 - The Tables
 - Discussion of the Measures of Image Quality
 - Intercomparisons
 - The Importance of Resolution
 - A Common-sense Test: Does removing antennas lower the image quality?
 - Tests of the Simulations
 - VTESS vs. CLEAN
 - Different Noise Realizations
 - C vs. CS Configuration
 - Comparison with Previous Results

- Conclusions
- Acknowledgements
- References
- About this document ...

[Next](#) | [Up](#) | [Previous](#)

Next: Introduction

Stephan Witz 2003-04-15