

1. Submit To: AS19
2. Conference Title: Interferometry in Space, Chair: Michael Shao
3. Title: **MAM Testbed Data Analysis: Cyclic Averaging**

4. Authors:

Xiaopei Pan, Jet Propulsion Laboratory

California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109

e-mail: pan@huey.jpl.nasa.gov, phone: 818-354-6618, Fax: 818-393-5239

Feng Zhao, Jet Propulsion Laboratory

California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109

e-mail: feng@huey.jpl.nasa.gov, phone: 818-354-3602, Fax: 818-393-5239

Michael Shao, Jet Propulsion Laboratory

California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109

e-mail: mshao@huey.jpl.nasa.gov, phone: 818-354-7834, Fax: 818-393-5239

5. Oral Presentation

6. Brief Biography:

Xiaopei Pan worked on the Mark III Stellar interferometer, and the Palomar Testbed Interferometer since 1987. He published the first binary star orbit with a submilli-arcsecond precision in 1989. He is now working on SIM at JPL.

7. Abstract

The micro-arcsecond metrology system (MAM) provides a testing ground for SIM to perform optical path difference measurements with picometer precision. Because of ghost fringes it is now evident that the cyclic error is the one of main error sources for SIM error budget. Many experiments have been conducted to diagnose and to characterize cyclic errors in the laser gauges, and in white light fringe detection. Long stroke data sets with cyclic error of a few manometers have been analyzed in frequency domain and in time domain. Simulations of cyclic errors provide sensitivity estimates for various configurations. It has been proposed to use phase measurements at different wavelengths to solve for the cyclic errors. Astrometric performance due to cyclic errors is investigated.

This work is supported under contract with the National Aeronautics and Space Administration.

8. Key Words: space interferometry; instruments;