MIRC Upgrade

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Motivations

• To increase uv coverage for imaging more complicated objects
  – MIRC 6T upgrade

• To improve flux calibration of each beam for better data quality
  – Photometric Channels (PCs) upgrade

• Engineering and commissioning in 2011 July, and the new MIRC has been fully functioning since then
MIRC Optics

Photometric Channels

Monnier et al 2006
Fringes with lab source

- Different beam pairs
- Space frequency
- Polarization phase alignment
Photometric Channels

Photometric Channel line

Fringe light

Photometric Channel line

Fringe light
Software upgrade
Happily dancing fringes from July 2011
Fringes during data pipeline
CHARA Collaboration Year-Eight Science Review

MIRC 4T  MIRC 6T

<table>
<thead>
<tr>
<th></th>
<th>MIRC 4T</th>
<th>MIRC 6T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baselines</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Triangles</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>
- Improve the light throughput of Photometric Channels by a factor of ~5
- Better data quality

Zet And observed on 2011 July 19
Detect a binary with contrast about 65:1 from closure phases.

37 And observed on 2011 July 19
MIRC upgrade Summary

- MIRC 6T with improved Photometric Channels system has been functioning well since 2011 July
- The uv coverage and data quality have been significantly improved
- MIRC sensitivity limit has been improved from H=4.5 to 5.5 (MIRC 1st YSO MWC 361 Hmag=5.5)
MIRC: Year 6 (2011) Summary

• Observing
  – 2011: 59 nights in total, 9 joint observations, 10 engineering nights, 36 nights of data, lost 12 nights to bad weather, lost 3 nights to other technical issues.
    • 38 nights were Michigan time
  – 2010: 62 nights in total/8 shared with 50 nights of data (81% clear!!)
    • 20/62 nights were “Michigan” time
  – 2009: 51 nights in total with 34 nights of data (66% clear)
    • 17/51 nights were “Michigan” time, the rest from other CHARA collaborations
  – 2008: 42 nights in total with 30 nights of data (66% clear)
  – 2007: 57 nights in total with 24 nights of data (42% clear)
MIRC: Year 6 (2011) Summary

• Publications:
  1. Monnier et al. 2011, WR 140
  2. Kraus et al. 2012, Beta CMi
  3. Smith et al. 2012, Gam Cas
  6. Baron et al. 2012, ALGOL (submitted)
  7. Stee et al. 2012, Gam Cas (submitted)

Some papers expected in 2012:
  1. Pedretti et al. 20112 “Zet And”