International Workshop on Phased Array Antenna Systems for Radio Astronomy
Brigham Young University, Provo, UT USA
May 3-5, 2010

Technical Program

Organizers:
Karl F. Warnick and Brian D. Jeffs, *Brigham Young University, USA*
Marianna Ivashina, *ASTRON, The Netherlands*

Monday, May 3, 2010

Updates on Worldwide Phased Array Development Efforts

9:00am **APERTIF Phased Array Feed development for the Westerbork Synthesis Radio Telescope,** W.A. van Cappellen, *ASTRON, The Netherlands*

9:30 **Aperture Array Developments at ASTRON,** S. Wijnholds, *ASTRON, The Netherlands*

10:00 **Chequerboard Phased Array Feed Testing for ASKAP,** A. Chippendale, J. O'Sullivan, J. Reynolds, R. Gough, D. Hayman, S. Hay, R. Shaw, and R. Qiao, *CSIRO, Australia*

10:30 Morning break

11:00 **Obtaining the Simulated Response of a 19 Element Focal Phased Array for the Feasibility Study for the Arecibo Radio Telescope,** G. Cortes-Medellin[1], K. F. Warnick[2], and B. Jeffs[2], *[1]NAIC, Cornell University, USA, [2]Brigham Young University, USA*

11:30 **PAF for the FAST Telescope,** Jin, C., Zhu, K., Gan, H., and Nan, R., *National Astronomical Observatories, Chinese Academy of Sciences, China*

12:00 **Active Impedance Matched Dual-Polarization Phased Array Feed for the GBT** K. F. Warnick[1], D. E. Carter[1], T. Webb[1], B. D. Jeffs[1], R. Norrod[2], J. R. Fisher[3], *[1]Brigham Young University, USA, [2]National Radio Astronomy Observatory, Green Bank, WV, USA, [3]National Radio Astronomy Observatory, Charlottesville, VA, USA*

12:30 Lunch (provided at workshop venue)

System Level Phased Array Issues

2:00 **The Science Case for APERTIF,** G. Heald[1], T. Oosterloo[1,2], and M. Verheijen[2], *[1]ASTRON, The Netherlands ,[2]Kapteyn Astronomical Institute, The Netherlands*

2:30 **Analysis of Reflector and Feed Scattering and Coupling Effects on the Sensitivity of Phased Array Feeds,** S. Hay[1], R. Mittra[2], and N. Huang[2,3], *[1]CSIRO ICT Centre, Australia, [2]EMC Lab, Pennsylvania State University, USA, [3]Yun-Tze University, Taiwan*

3:00 **Eliminating Sensitivity Ripples in Prime Focus Reflectors with Low-scattering Phased Array Feeds,** W.A. van Cappellen and L. Bakker, *ASTRON, The Netherlands*

3:30 Afternoon break

4:00 **Practical Aspects of Focal Plane Array Testing: Lessons from an FPA Test-bed at CSIRO, Marsfield,** D. Hayman[1-3], T. Bird[2,3], K. Esselle[3], and P. Hall[4], *[1]CSIRO Astronomy and Space Science, Australia, [2]CSIRO ICT Centre, Australia, [3]Macquarie University, Australia, [4]Curtin University of Technology, Australia*

4:30 Discussion

Tuesday, May 4

Calibration, Beamforming and Polarimetry with Astronomical Phased Arrays

9:00 **Calibration of Radio Astronomical Phased Arrays,** S. Wijnholds, *ASTRON, The Netherlands*

9:30 **Deep Nulling Interference Cancelation for Phased Array Feeds,** J. Landon, B. D. Jeffs, and K. F. Warnick, *Brigham Young University, USA*

10:00 **Beamformer Design Methods for Phased Array Feeds,** M. Elmer, B. D. Jeffs, and K. F. Warnick, *Brigham Young University, USA*

10:30 Morning break

11:00 **On the Polarization Diversity of Aperture Array Antennas for SKA Wide-Field Polarimetry,** R. Maaskant and T. D. Carozzi, *ASTRON, The Netherlands, Chalmers University of Technology, Sweden*

11:30 **Polarimetry with Phased-Array Feeds,** B. Veidt, *National Research Council of Canada, Canada*

12:00 **Calibration and Beamforming for Polarimetric Phased Array Feeds**, K. F. Warnick, B. Jeffs, and T. Webb, *Brigham Young University, USA*

12:30 Lunch (provided at workshop site)

Design Optimization of Phased Arrays and RF Electronics

2:00 **Numerical Approach for the Analysis and Optimization of Phased Array Feed Systems** M. Ivashina, *ASTRON, The Netherlands*

2:30 **Circular Phased Array of Wideband 3D Vivaldi Antennas for Radio Astronomy** R. Sarkis and C. Craeye, *Université Catholique de Louvain, Belgium*

3:00 **Low Noise Amplifiers for Phased Array Feeds,** S. Weinreb, *California Institute of Technology, USA*

3:30 Afternoon break

4:00 **Comparison of Tuner-based Noise-parameter Extraction Methods for Measurement of Room-temperature SKA LNAs,** L. Belostotski, *University of Calgary, Canada*

4:30 **Photonic Integrated Beamformers for Broadband Radio Astronomy,** M. Burla[1], R. Khan[1], D. Marpaung[1], C. Roeloffzen[1], P. Maat[2], K. Dijkstra[2], A. Leinse[3], M. Hoekman[3], and R. Heideman[3], *[1]Telecommunication Engineering Group, CTIT Research Institute, University of Twente, the Netherlands, [2]ASTRON, The Netherlands, [3]LioniX B.V., The Netherlands*

6:30 Barbeque Banquet Dinner (Harmon Building Patio)

Wednesday, May 5

SKA Technology Development

9:00am **Shaped Optics and Phased-Array Feeds,** B. Veidt, *National Research Council of Canada, Canada*

9:30 **Non-periodic Arrays for Radio-astronomy Applications**, D. González-Ovejero, E. de Lera Acedo, N. Razavi-Ghods, L. E. García-Muñoz, and C. Craeye, *Université Catholique Louvain, Belgium.*

10:00 **Sky Noise and Sensitivity Studies of Array Configurations and Antenna Elements for the Low-Frequency Band of the SKA**, E. de Lera Acedo[1], N. Razavi-Ghods1, E. García[2], P. J. Duffett-Smith[1], and P. Alexander[1], *[1]University of Cambridge, UK, [2]University Carlos III of Madrid, Spain*

10:30 Morning break

11:00 **On-going work with the Cryogenic Eleven Antenna at the MIT Haystack Observatory** C. Beaudoin[1], P.-S. Kildal[2], J. Yang[2], M. Pantaleev[3], and B. Klein[4], *[1]MIT Haystack Observatory,USA, [2]Chalmers Institute of Technology, Sweden, [3]Onsala Space Observatory, Sweden, [4]University of the Witwatersrand, South Africa*

11:30 **Steps Toward a Cryogenic L-band Phased Array Feed for Reflector Antennas** R. Norrod[1], J. R. Fisher[2], B. Jeffs[3], and K. F. Warnick[3], *[1]National Radio Astronomy Observatory, Green Bank, WV, USA, [2]National Radio Astronomy Observatory, Charlottesville, VA, USA, [3]Brigham Young University, USA*

12:00 **System Noise Calculations over the Decade Bandwidth of the Eleven Feed** B. Klein[1,2], P. Kildal[2], J. Yang[2], M. Pantaleev[3], L. Helldner[3],and C. Beaudoin[4], *[1]University of the Witwatersrand, South Africa, [2] Chalmers Institute of Technology, Sweden, [3] Onsala Space Observatory, Sweden, [4] MIT Haystack Observatory, USA*

12:30 Lunch (provided at workshop venue)

2:00 **FIDA3: Design and Characterization of a Differential Active Array Demonstrator for the SKA,** O. Garcia-Perez[1,2], L. E. Garcia-Muñoz[1], D. Segovia-Vargas[1], V. Gonzalez-Posadas[3], and J. A. Lopez-Fernandez[2], *[1]DTSC, Univ. Carlos III de Madrid, Spain, [2]OAN, Instituto Geográfico Nacional, Spain, [3]DIAC, Univ. Politécnica de Madrid, Spain*

2:30 Discussion

3:00 Afternoon break (general workshop sessions end)

3:30 **PAFSKA Meeting** (contact Dave DeBoer for more information)