

**The Promise and Challenges of the ALMA Wideband Sensitivity Upgrade**  
24 - 28 June 2024

**WORKSHOP PROGRAMME**

Monday, 24 June			
12:30	Lunch		
13:00	Registration		
Session 1 (afternoon)			
<i>WSU overview, correlator, wideband at other facilities</i>			
13:30	Welcome	Barcons	
13:45	Introduction	LOC	
13:55	Invited	Gonzalez	The ALMA2030 Wideband Sensitive Upgrade - Status Update
14:20	Invited	Brogan	The ATAC correlator
14:45	Contributed	Kim	GPU Spectrometer for the Total Power Array
15:00	Coffee break		
<i>Astrochemistry</i>			
15:35	Invited	Vastel	From cold cores to protostars: the promises of WSU
16:00	Contributed	Csengeri	NASCENT-stars large program: origin of molecular complexity towards emerging high-mass protostars
16:15	Contributed	Barnes	An overview of issues and lessons learnt working with the ACES ALMA Large Program
<i>Discussion</i>			
16:32	Discussion	Lead: Carpenter	Community input on rollout of correlator capabilities
17:30	Welcome reception		
Tuesday, 25 June			
Session 2 (morning)			
<i>Digitizers and receiver components</i>			
09:00	Invited	Quertier	IF processor for the ALMA Wideband Sensitivity Upgrade
09:25	Invited	Gallego	Development of Cryogenic IF Low Noise Amplifiers for the ALMA Wideband Sensitivity Upgrade
<i>High redshift galaxies</i>			
09:50	Invited	De Looze	A deep exploration of [CII] and dust continuum emission at high-z with the ALMA WSU
10:15	Solicited	Rizzo	An ALMA archival perspective on the evolution of galaxy dynamics
10:35	Coffee break		
11:05	Contributed	Boogaard	Unveiling the Cosmic History of Gas and Dust with Broad ALMA Bandwidths
11:20	Contributed	Yoon	A preview of the ALMA WSU: prospects of the wide-band spectral observation of high-z galaxies
11:35	Poster	Baudry	Cosmic Rays at the ALMA sites: impact on thin gate-size electronics and radiation exposure
11:37	Poster	Chiong	Impact of LO Leakage in the New IF Frequency Range of the ALMA Wideband Sensitivity Upgrade
11:39	Poster	Wing-Fai	The nearest neutral gas phase to Supermassive Black Holes
<i>Discussion</i>			
11:41	Discussion	Lead: Hovatta	Priority of 4x bandwidth compared to other upgrades
12:40	Lunch		
Session 3 (afternoon)			
<i>Receiver components</i>			
13:45	Solicited	Kaneko	Summary of wide-band receiver optics studies at NAOJ over the last decade
14:05	Contributed	Pavolotsky	GARD SIS Junction Fabrication Process to serve Next Generation Receivers for ALMA
14:20	Contributed	Desmaris	Advanced Waveguide Components and Technology for 2SB dual polarization receiver cartridges
<i>Evolved stars, masers and pulsars</i>			
14:35	Invited	Vlemmings	Evolved stars
15:00	Coffee break		
15:30	Solicited	Impellizzeri	EHT goals and ambitions in the WSU era
15:45	Solicited	Torne	Time domain science with ALMA and the Wideband Sensitivity Upgrade
16:00	Poster	Joint	Future of Observations in the mm/sub-mm Range: GARD's Novel Technologies for ALMA and Beyond
<i>Discussion</i>			
16:02	Discussion	Lead: Doherty	How to power ALMA in a carbon neutral future
Wednesday, 26 June			
Session 4 (morning)			
<i>Data processing and quality assessment in the WSU era</i>			
09:00	Invited	Kepley	ALMA WSU: Data Processing Challenges and Opportunities
09:25	Invited	Guglielmetti	A BRAIN study to tackle imaging in the ALMA 2030 era
09:50	Contributed	Randall	Optimising the Data Processing and Quality Assurance strategy in the WSU era
<i>The origin of elements, the solar system and the Sun</i>			
10:05	Invited	Jørgensen	Complex chemistry during the early stages of star formation
10:30	Coffee break		
11:00	Invited	Wamfler	The future of solar system observations with the ALMA Wideband Sensitivity Upgrade
11:25	Invited	Wedemeyer	Broadening ALMA's Scientific Potential through Wideband Observations of the Sun
11:50	Poster	Toribio	The ALMA 2030 Data Challenges – preparing the user community and the ARCs for the future
<i>Discussion</i>			
11:52	Discussion	Lead: Martin	Observing plans during WSU commissioning
12:50	Lunch		

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Session 5 (afternoon)			
<i>Alternative ways of dealing with high data volumes</i>			
13:45	Solicited	Stoehr	The ALMA Science Archive, a reprocessing service and a science enabling infrastructure in the WSU era
14:05	Contributed	Dijkema	On-the-fly data reduction by streaming processing of visibilities
14:20	Contributed	Comito	Accelerating massive data processing in Python with Heat
<i>Galaxies 1</i>			
14:35	Invited	Querejeta	The prospects of the ALMA wideband sensitivity upgrade for the study of nearby galaxies
15:00	Coffee break		
15:30	Invited	Hovatta	Polarization over wide bandwidths - impact of ALMA WSU on studies of extreme Faraday rotation
15:55	Contributed	Martin	Getting ready for ultra-wide spectral scans: Reflections on the ALCHEMI Large Program
16:10	Poster	Tafoya	Impact of WSU on Spectral Index Determination and Calibration Methods
16:12	Poster	Koenig	ALMA PI science with subarrays - Making ALMA observations post WSU even more efficient
<i>Discussion</i>			
16:14	Discussion	Lead: Guglielmetti & Stoehr	AI based analysis tools (including imaging) to exploit wide-band datasets and mining of the ALMA archive
19:30	Social dinner in Munich centre ( <i>details will be sent to participants via e-mail</i> )		
Thursday, 27 June			
Session 6 (morning)			
<i>Receivers 1</i>			
09:00	Solicited	Navarrini	Updates on ALMA Band 6v2 Receiver Development
09:20	Solicited	Kojima	ALMA Band 8 version2 receiver upgrade project
09:40	Contributed	Risacher	Study of potential upgrades for the ALMA Band 7 receiver
09:55	Contributed	Belitsky	Exploring boundaries for wider RF and wider IF bands for ALMA SIS receivers
<i>Galaxies 2</i>			
10:10	Contributed	Peroux	ALMA Past and Future Contributions to a Full Understanding of the Baryon Cycle
10:25	Coffee break		
10:55	Contributed	Bollo	A Window on Cosmic Evolution through ALMA Calibrator Data
11:10	Contributed	Di Mascolo	Widening our view of the hot Universe
<i>Discussion</i>			
11:25	Discussion	Lead: George	Needs of the community regarding receivers
12:30	Lunch		
Session 7 (afternoon)			
<i>Receivers 2</i>			
13:30	Contributed	Hesper	Towards a Producible ALMA2030-Ready Sideband-Separating Band 9 Receiver
13:45	Contributed	Hwang	Band-4+5 Receiver Front-End: Idea and Initial Development in East Asia Consortium
14:00	Contributed	Franks	The Integration of LNA Based Receivers for Millimetre and Sub-millimetre Wavelength Radio Astronomy
14:15	Solicited	Phillips	ALMA Band 2
<i>Star Formation</i>			
14:35	Invited	Beltran	Polarization studies and more with new ALMA capabilities
15:00	Coffee break		
15:30	Contributed	De Simone	The origin of chemical complexity: in the earth of young forming planetary system
15:45	Contributed	Jones	Robust temperatures and luminosities of cores in 1000 high-mass cluster-forming regions with ALMAGAL
16:00	Poster	Pütz	InGaAs mHEMT MMIC Technology for Low Noise Amplifiers in Radio Astronomy
<i>Discussion</i>			
16:02	Discussion	Lead: Hatziminaoglou	Needs of the community regarding user support
Friday, 28 June			
Session 8 (morning)			
<i>Protoplanetary discs</i>			
09:00	Invited	Miotello	Planet-forming disks in the WSU era
09:25	Contributed	Booth	Revealing the volatile planet formation reservoir with ALMA spectral line surveys
09:40	Contributed	Kurtovic	Revealing the gas properties of the most typical planet-forming disks
09:55	Contributed	Valdivia	Rivers in the sky: streamers as catalysts for physical and chemical changes in protostars and disks
10:10	Poster	Pineda	Broadband observations at 3mm: The role of the environment on star- and disk-formation
10:12	Coffee break		
<i>Towards the 2040s</i>			
10:45	Invited	Baryshev	ALMA 2040+, technologies beyond the current upgrade
11:10	Contributed	Magdis	Science drivers and technical considerations for an ALMA Focal Plane Array
<i>Discussion</i>			
11:25	Discussion	Lead: Testi	Towards ALMA 2040
12:30	Lunch		
12:30	End of workshop		