



Atacama Large Millimeter/Submillimeter Array (ALMA)

50 x 12m array

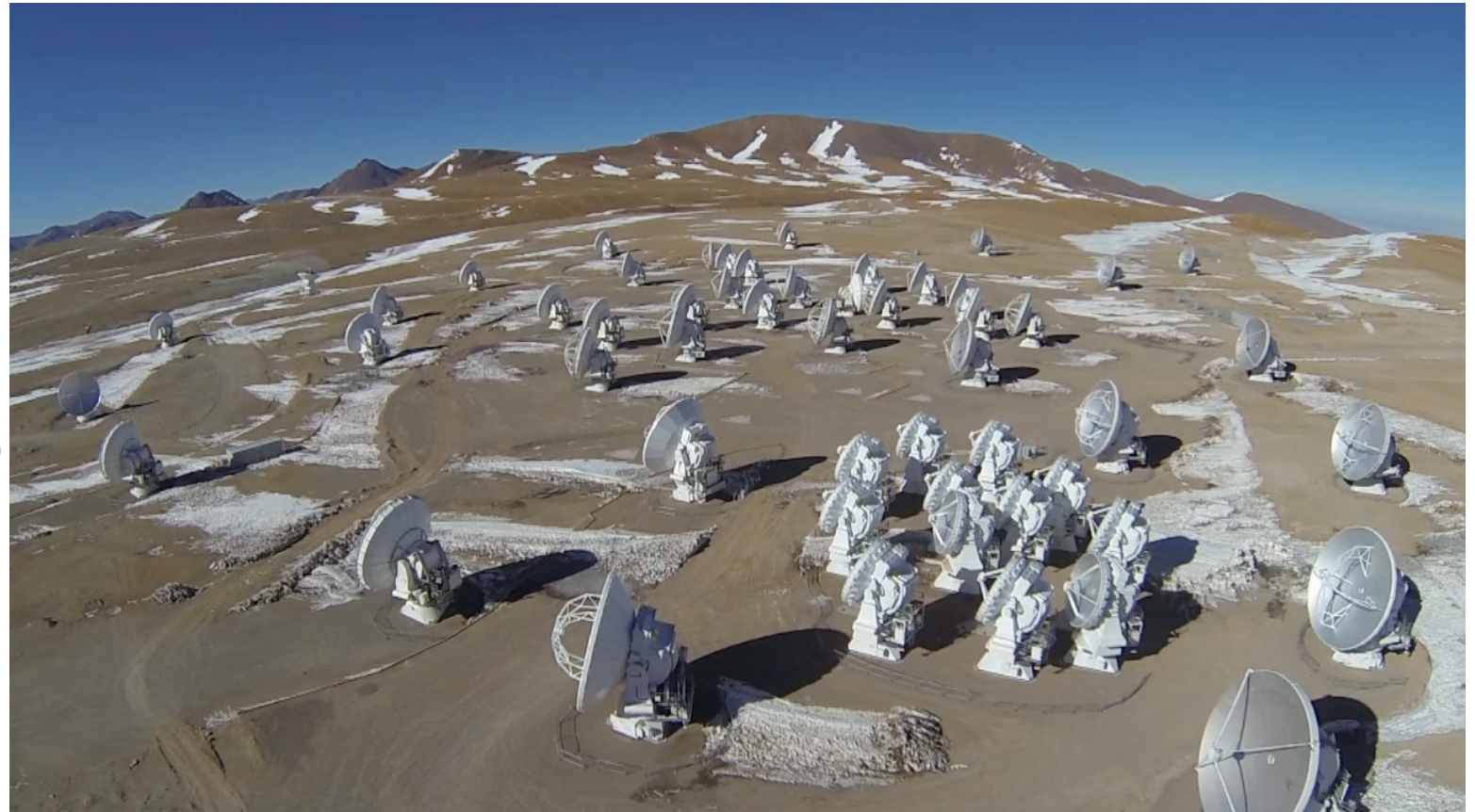
12 x 7m array

4 x 12m TP

Longest baseline 16km

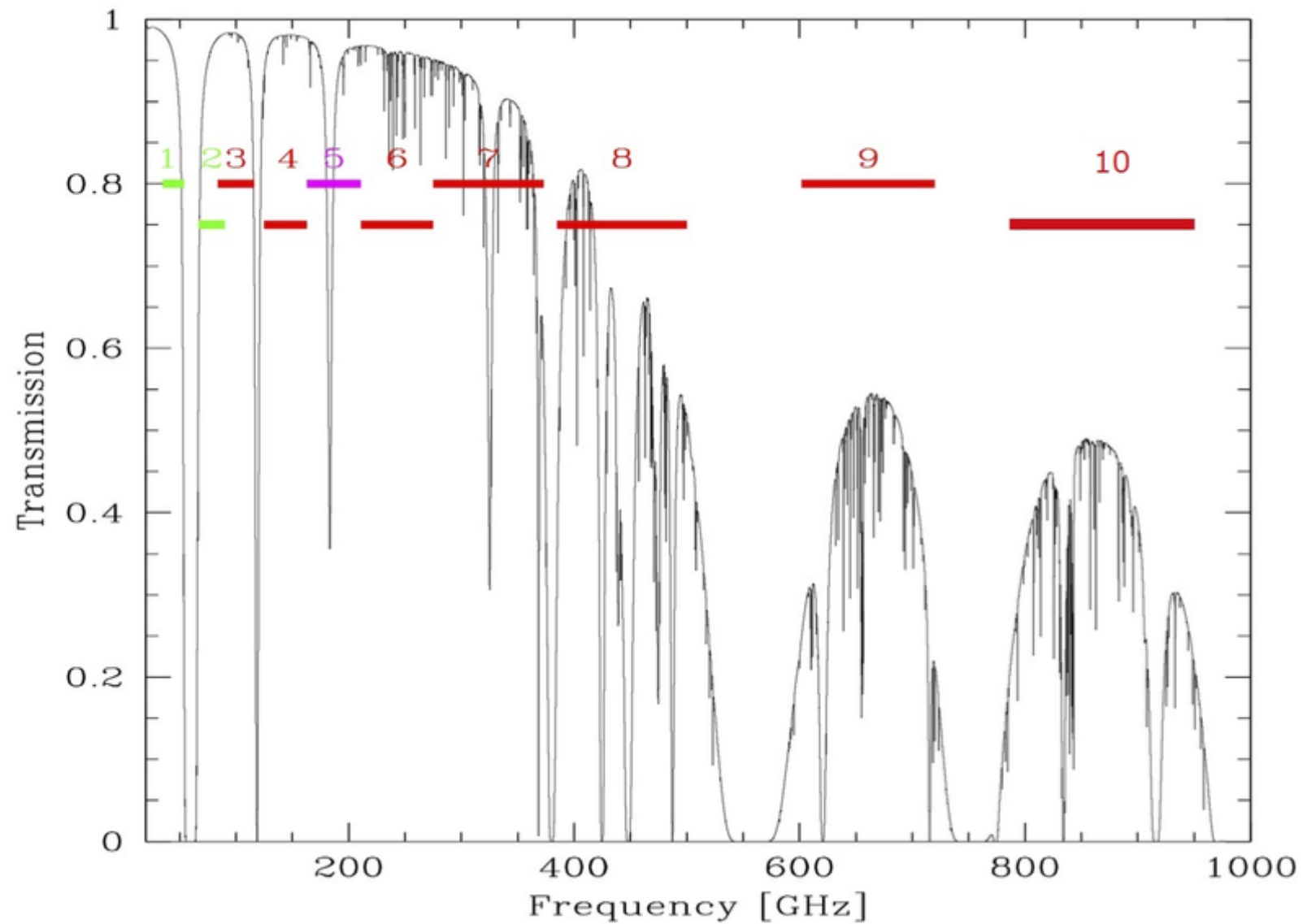
(about **0.02"** at band-4, 6, 7, & 10)

0.01km/s velocity resolution



Receivers

Atmospheric transmission at Chajnantor, pwv = 0.5 mm



The Sun never sets on ALMA!



The Atacama Large Millimeter/submillimeter Array (ALMA), an international astronomy facility, is a partnership of the European Organisation for Astronomical Research in the Southern Hemisphere (ESO), the U.S. National Science Foundation (NSF) and the National Institutes of Natural Sciences (NINS) of Japan in cooperation with the Republic of Chile. ALMA is funded by ESO on behalf of its Member States, by NSF in cooperation with the National Research Council of Canada (NRC) and the National Science Council of Taiwan (NSC) and by NINS in cooperation with the Academia Sinica (AS) in Taiwan and the Korea Astronomy and Space Science Institute (KASI).

Korea ALMA Project

(<http://alma.kasi.re.kr>)



ALMA

Atacama Large Millimeter/submillimeter Array



☆ News

☆ **East-Asia ALMA
Science Workshop 2017
- Korea**

○ Instrumentation

○ Korea-ARC Node

Events

Computing Facilities

○ People Korea

ALMA staff KASI

ALMA staff Univ.

○ ALMA Archival Science

○ Call for proposals

Proposal Preparation

Previous Proposal Calls

○ Publication

Announcements

2017-Dec-18

[ALMA Cycle 6 Pre-announcement](#)

The Joint ALMA Observatory (JAO) will start the next cycle of observing (Cycle 6) in October 2018. A Call for Proposals with detailed information on Cycle 6 will be issued in March 2018, with a deadline for proposal submission in April 2018. This pre-announcement highlights aspects of the Cycle 6 proposal call that are needed to plan proposals ([click](#)).

General information: ALMA Cycle 6 will start in early October 2018 and span 12 months. It is anticipated that 4000 hours of 12-m Array time will be available for successful observations of approved projects, and 3000 hours will be available on the Atacama Compact Array (ACA), also known as the Morita Array.

2017-Nov-27-29

[East Asia ALMA Science Workshop 2017](#)



Korea Astronomy and Space Science Institute, Daejeon.

People working on the ALMA project



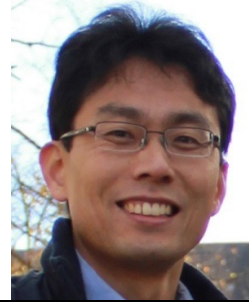
Jongsoo Kim



A-Ran Lyo



Jihyun Kang



Woojin Kwon



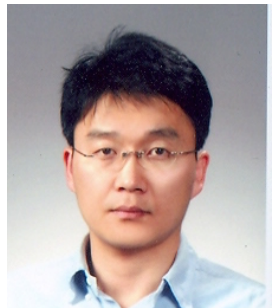
Se-Heon Oh



Kijeong Yim



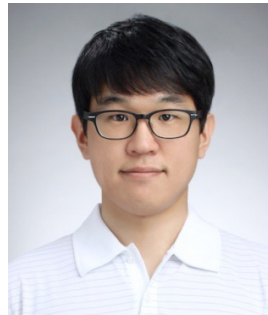
Sujin Kim



Jung-Won Lee



Do-heung Je



Bangwon Lee

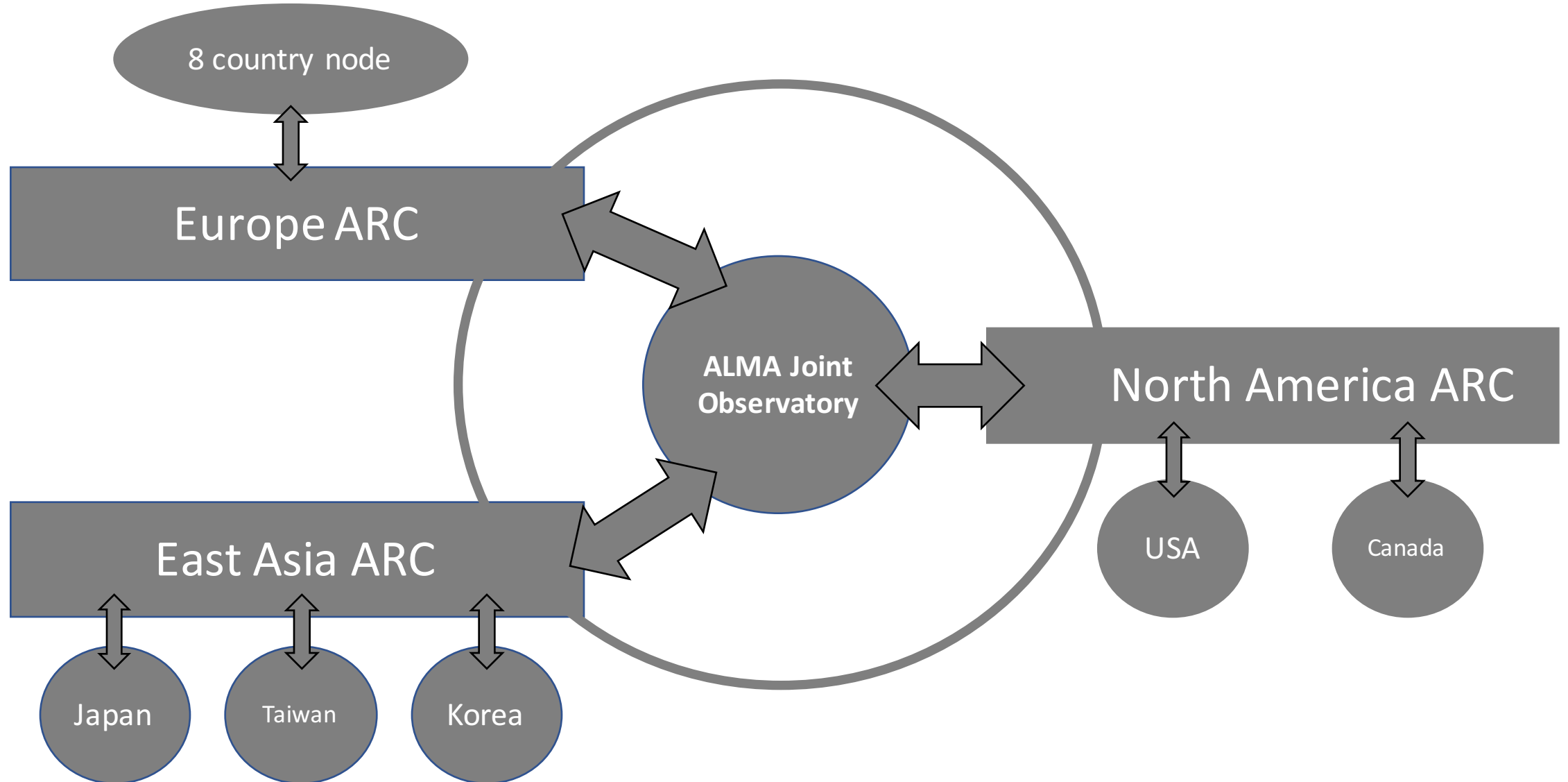


Hyunwoo Kang

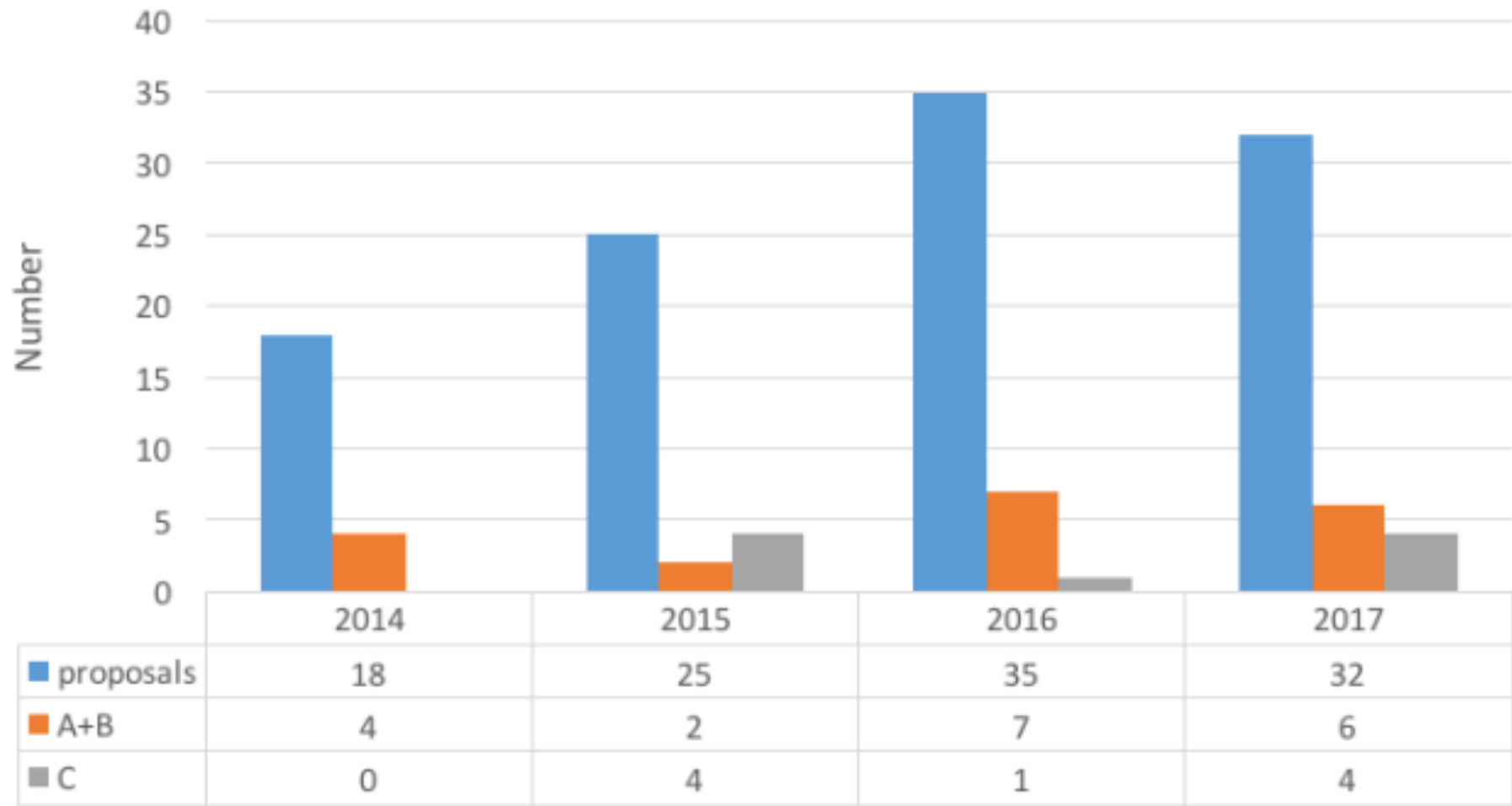
Support for ALMA proposal preparation
P2G (observational script)
QA2 (data reduction)
AoD (QA0+1; operation on site)

Multi-beam receiver covering Band7+8

Structure of the ALMA Regional Center (ARC)



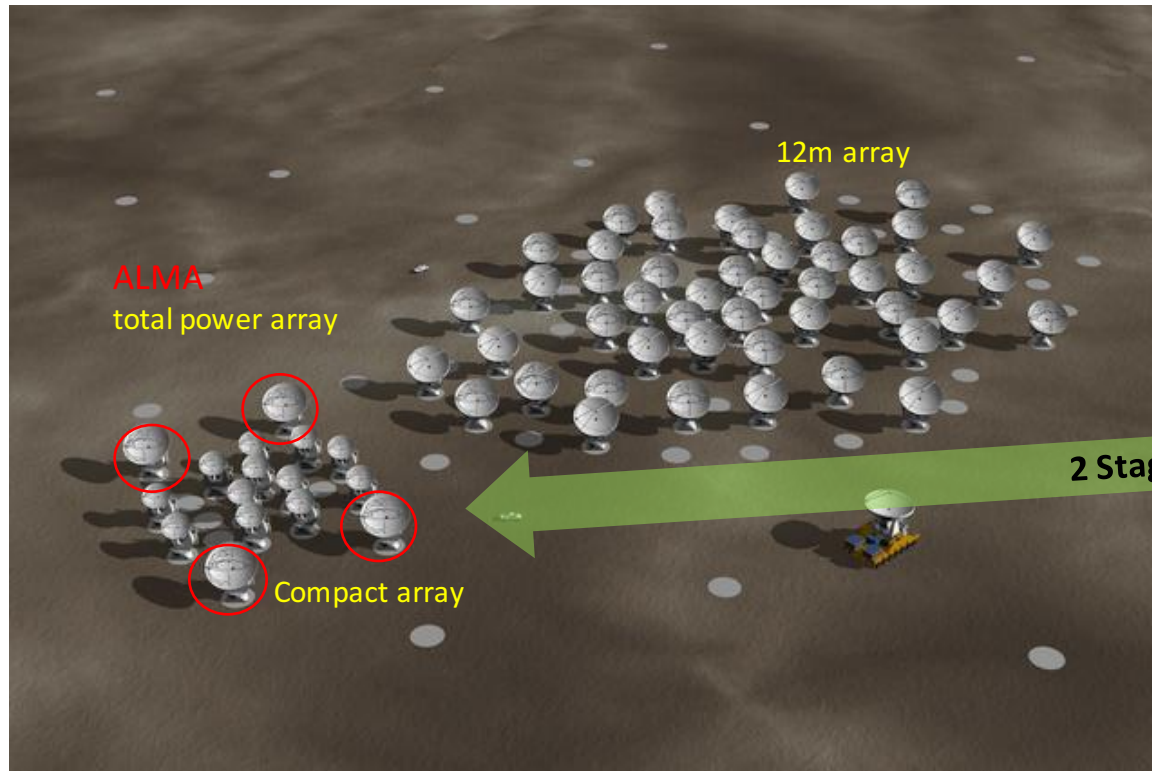
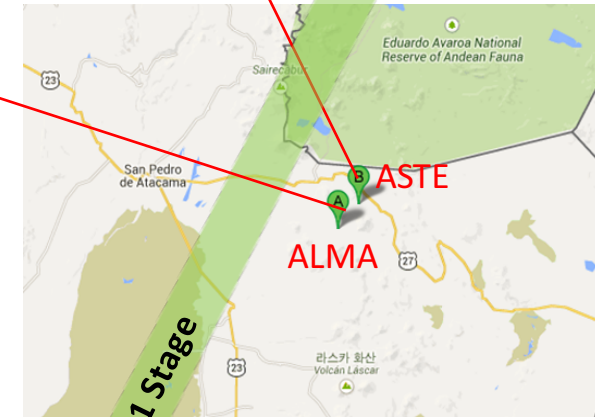
Yearly Status of ALMA Proposals form Korea



Pub #			2(first)+4	2(first)+4
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Receiver Development

- 2015-2019: ASTE single beam receiver covering 275-500 GHz
- 2019-2020: ASTE multi-beam receiver
- 2021-2024: ALMA multi-beam receiver
- 2015-2018: ASTE, ALMA GPU Spectrometer



Korea-ARC Activities (Instrument development: frontend)

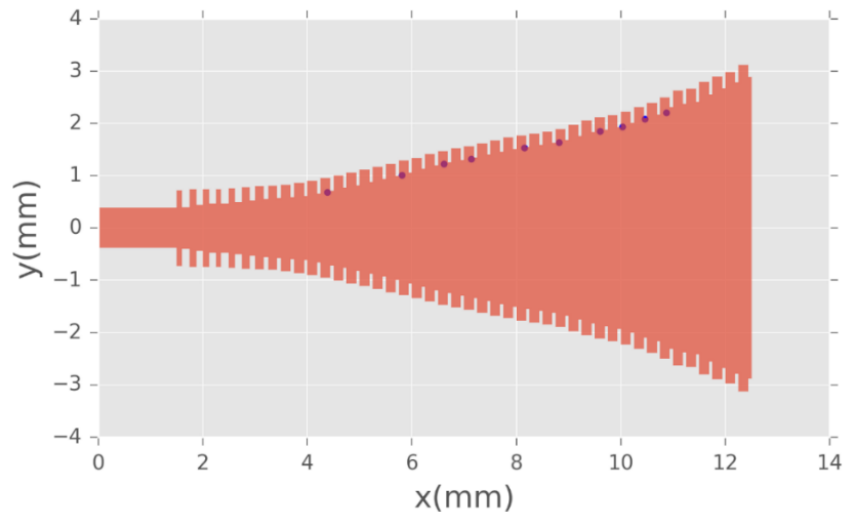
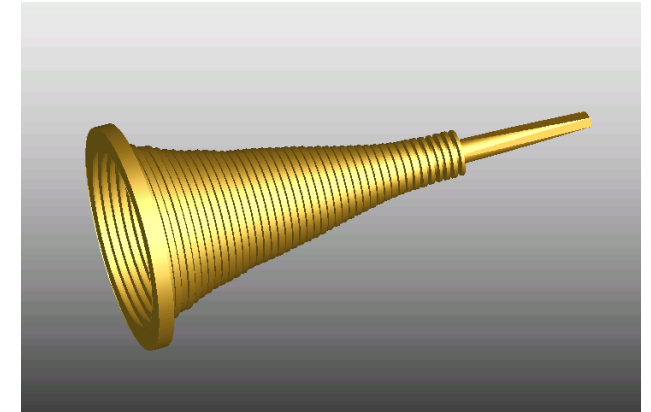
1. KASI 275-500 GHz feed horn

- Cross-sectional profile designed to meet

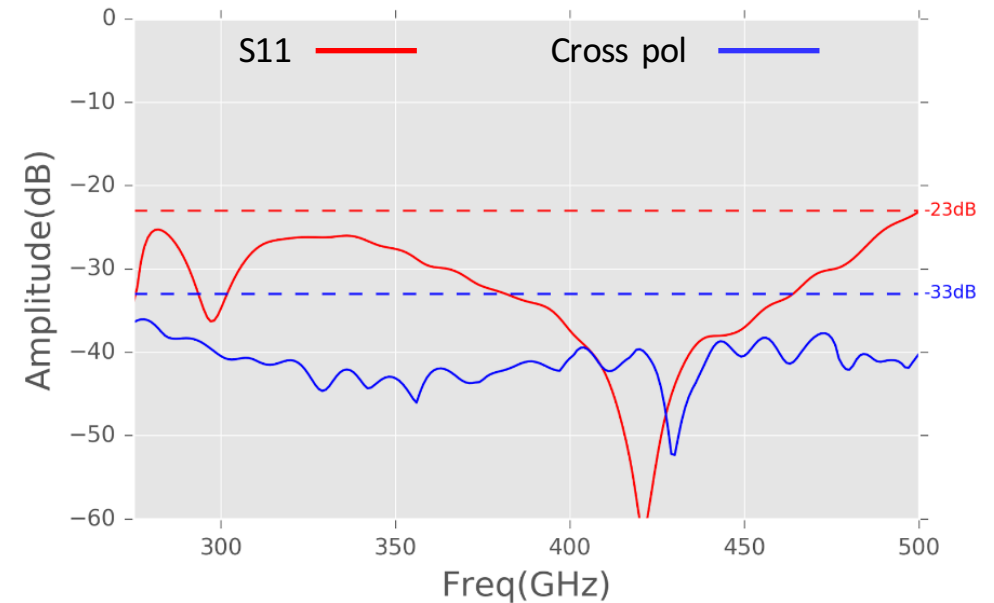
① -30 dB cross-polarization

② -23 dB returned power

③ > 80% aperture efficiency with 2 mirrors when coupled to the ASTE telescope optics

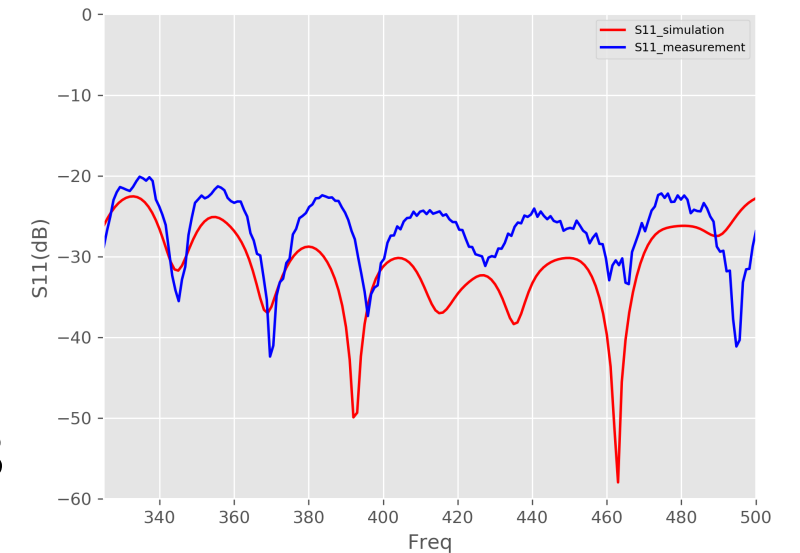
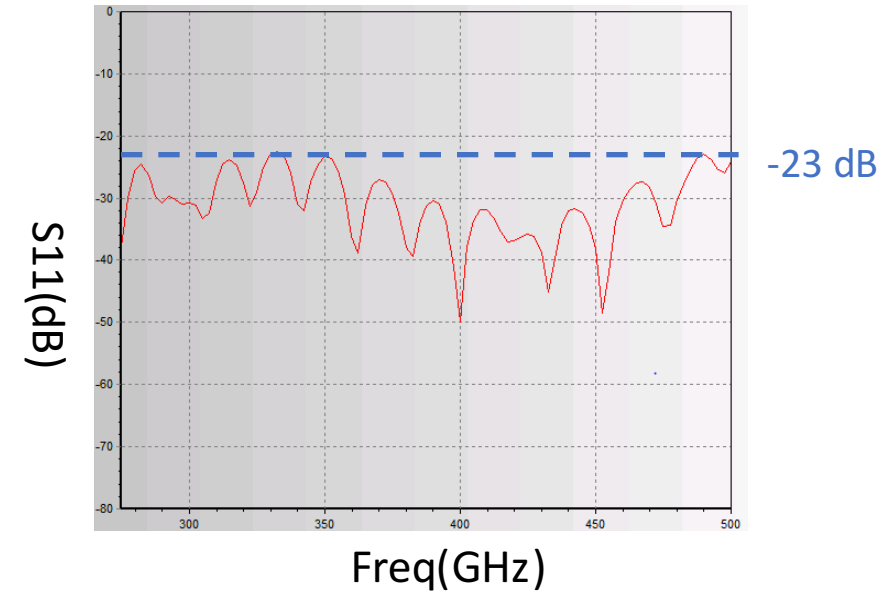


corrugations view



simulated performance (without WG transition)

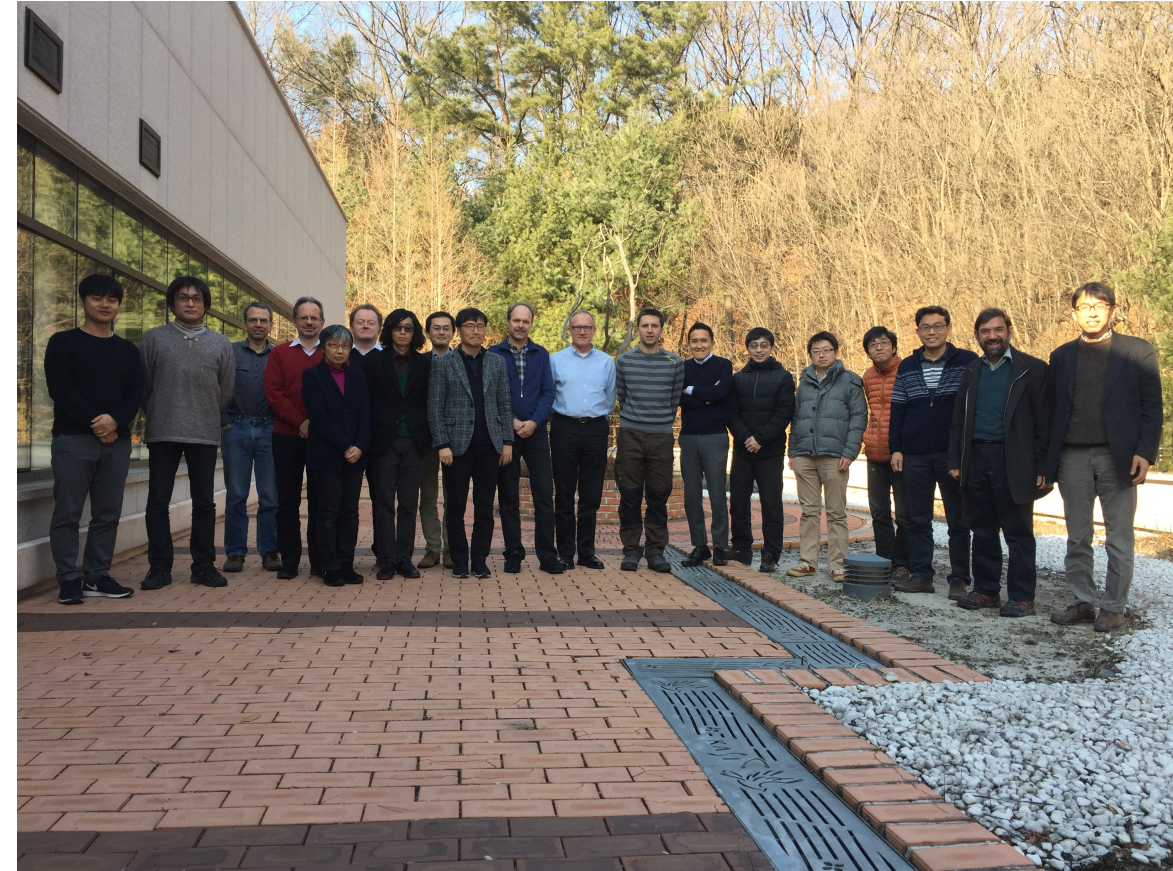
Measurement status



- fabricated horn (direct-machined by Kawashima Kiko) on 1 port VNA measurement setup (325-500 GHz)
- 275-325 GHz measurement scheduled in early Jan. 2018

Korea-ARC Activities (Instrument development: Backend)

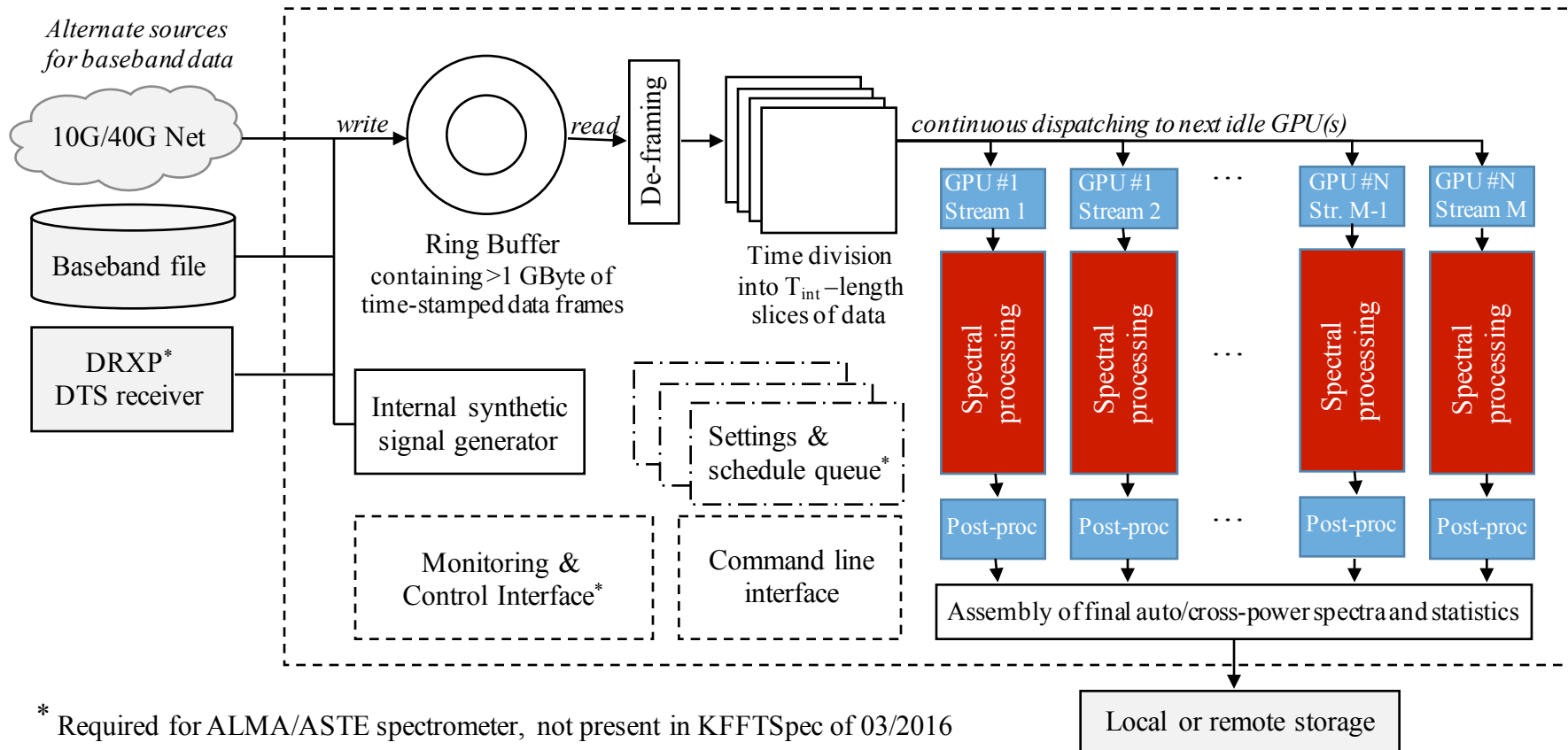
2. ALMA ACA TP Array GPU Spectrometer Preliminary Design Review (20-21/Feb, 2017)



- Nov/2017: ASAC and ALMA Board approved the GPU spectrometer.

KVN & ASTE/ALMA TP (Total Power) GPU Spectrometer

KFFTSpec: data flow and functions inside GPU server



GPU Spectrometer

- dynamic range: 1:10000
- spectral resolution: $2 \text{ GHz} / 2^{19} = 0.004 \text{ MHz}$
= 0.005 km/sec at 230GHz
- temporal integration: 1msec for TDM, and 16msec for FDM
- number of output spectral channel: 4096

