GP-PU
Progress Status Presentation
— Spring 2018 —

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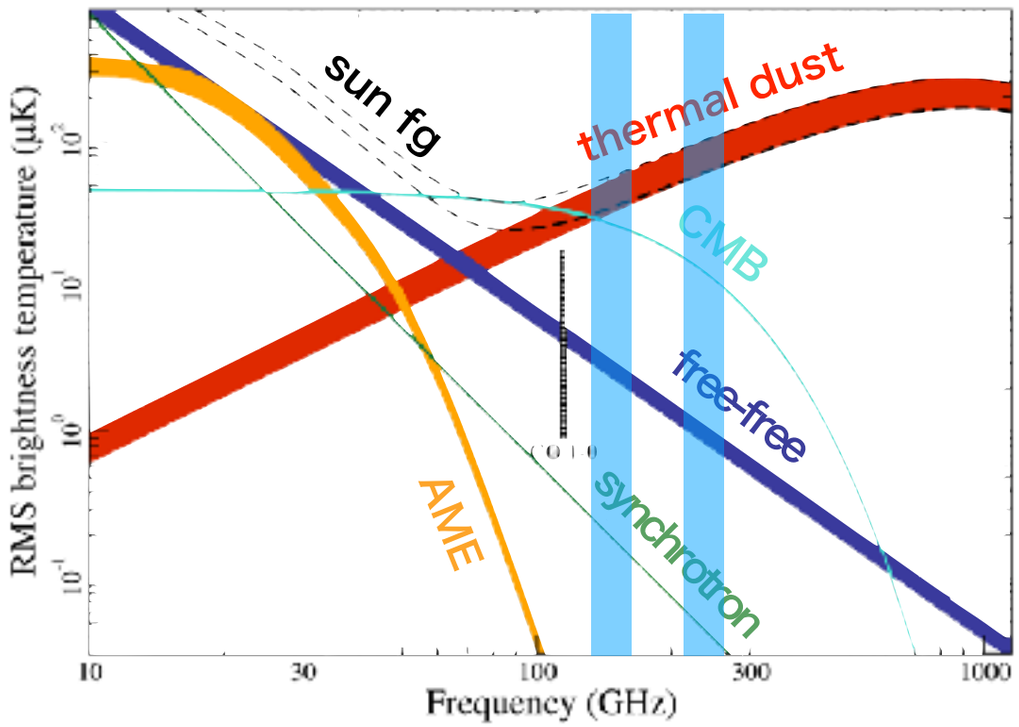
Goal

detecting the CMB B-mode polarization originated from primordial gravitational wave with GroundBIRD

Objective

- pioneering interstellar dust physics with highly precise CMB observation
- improving the detection limit of CMB B-mode signal

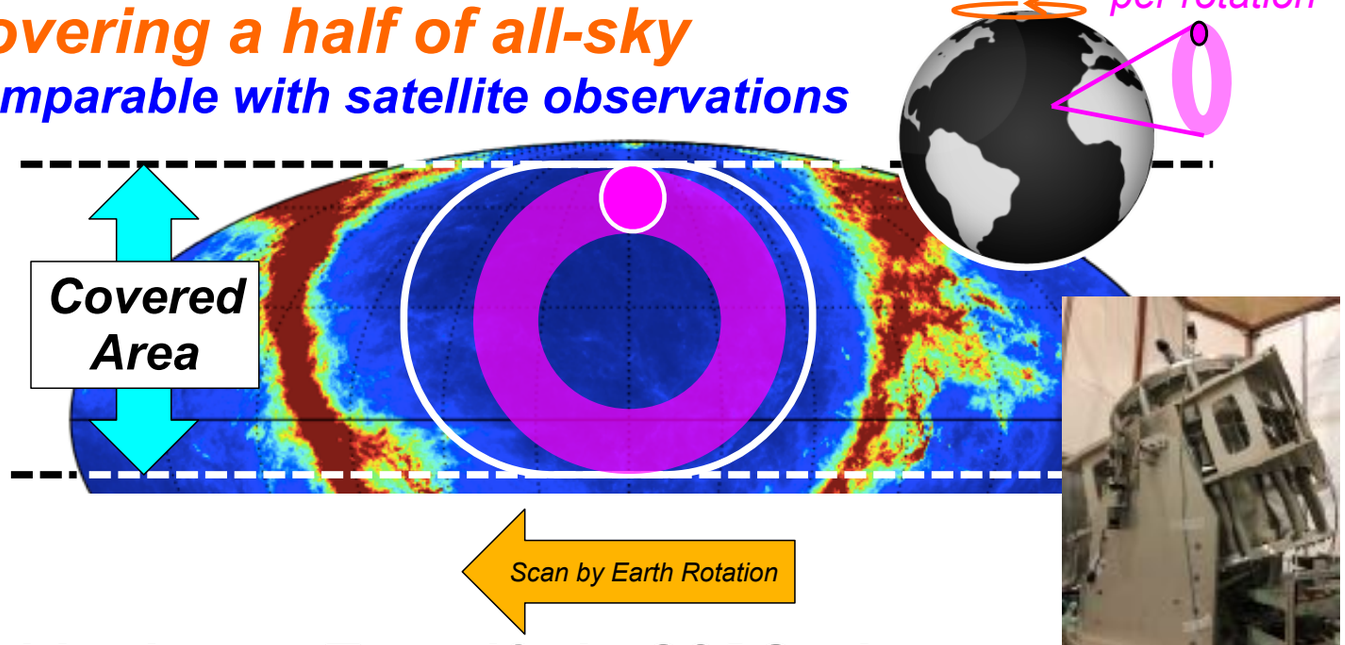
intensity spectra



GroundBIRD Experiment

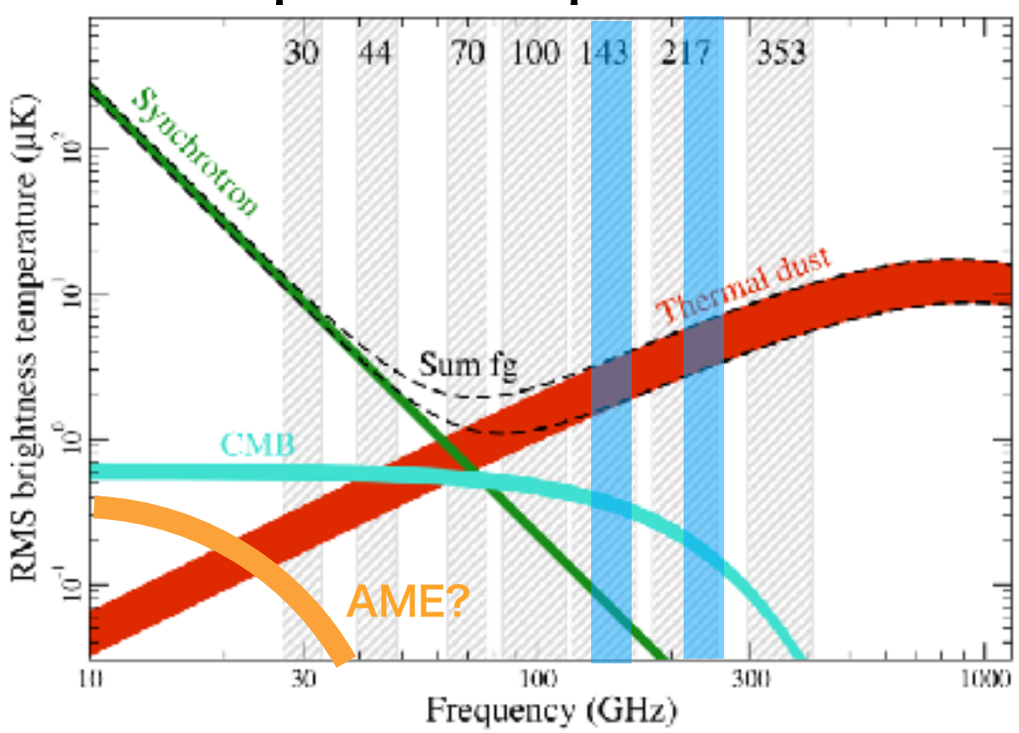
Covering a half of all-sky

Comparable with satellite observations



shipping to Tenerife in 2018 winter

polarized spectra



Planck Collaboration (2015)

Activity Report

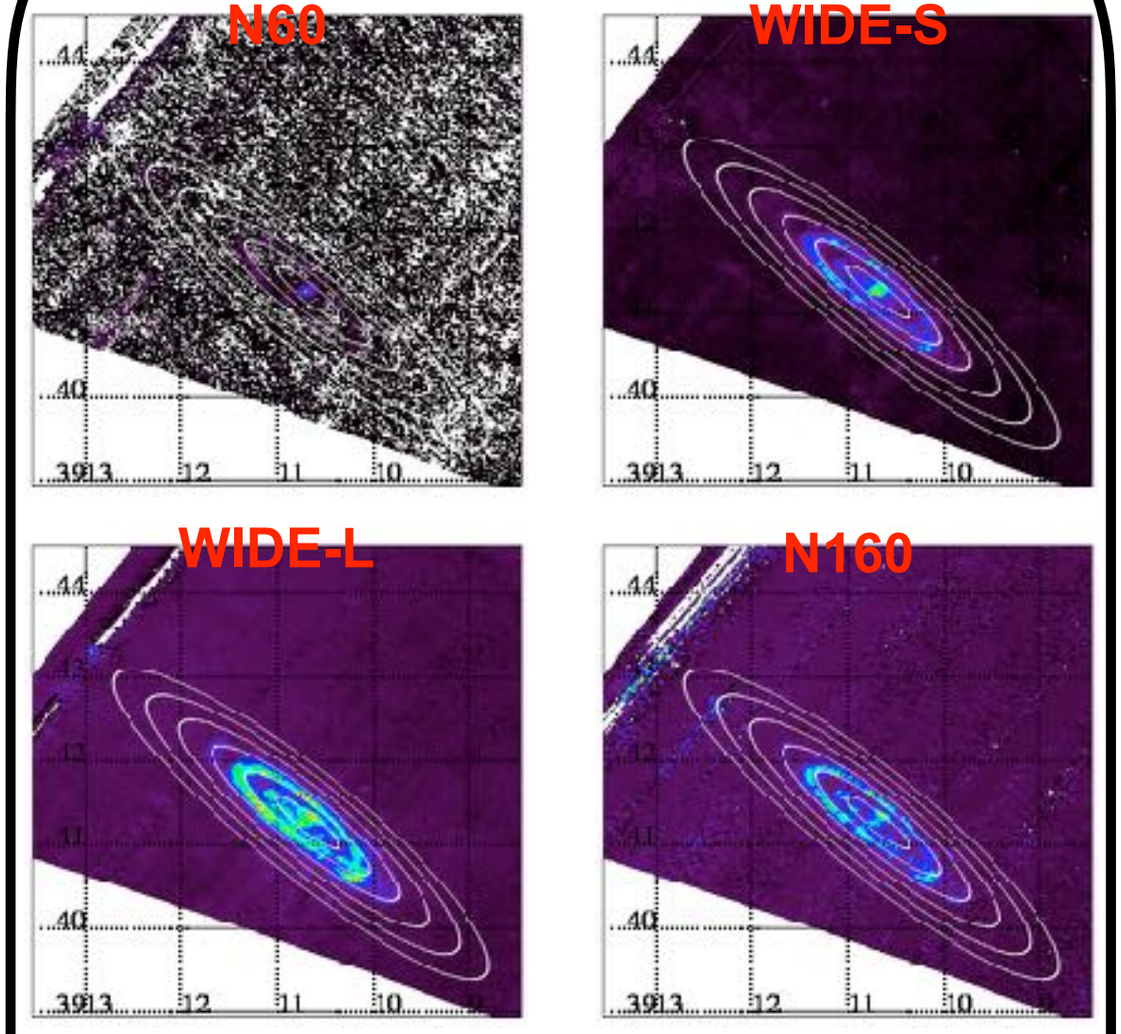
I attended one international meeting, two domestic conferences, and one research meeting in 2017 autumn-winter semester.

2017	Oct.	AKARI 2017 Conference (international meeting) @ the University of Tokyo
	Nov.	
	Dec.	34th Grain Formation Workshop in Kyoto
2018	Jan.	
	Feb.	
	Mar.	GroundBIRD team meeting in Tokyo
		ASJ Annual Meeting @ Chiba University

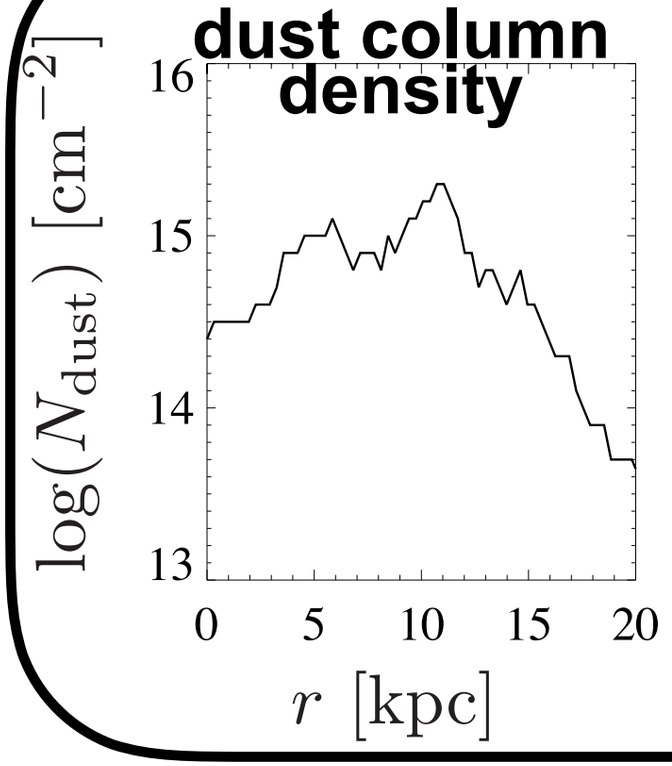
scheme's test with applying for M31

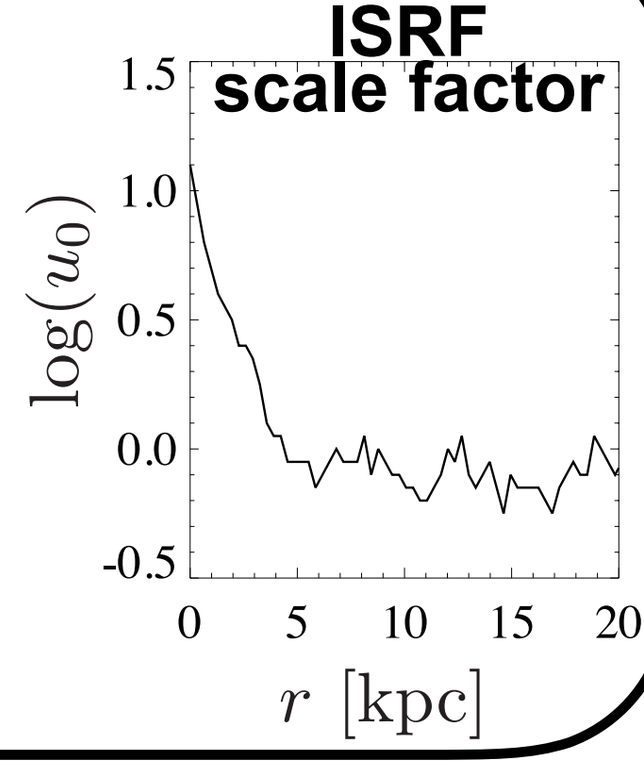
using our dust spectrum model

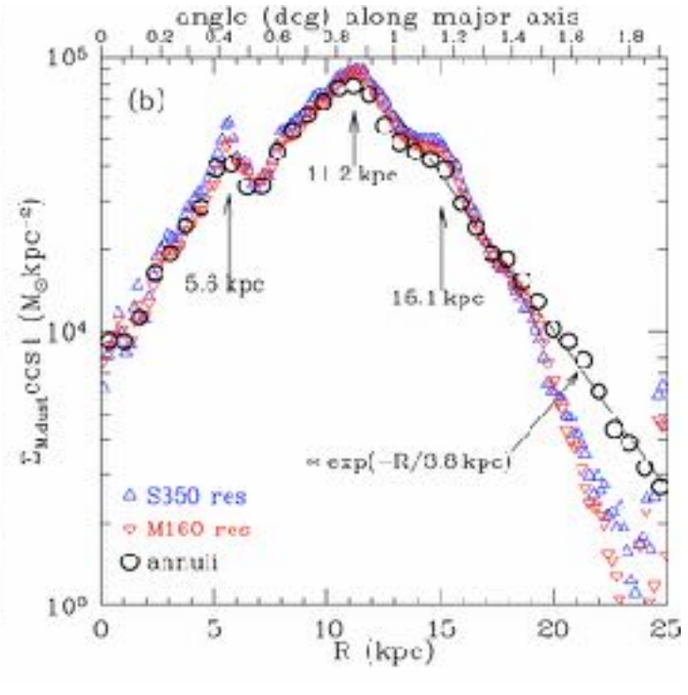
AKARI's map

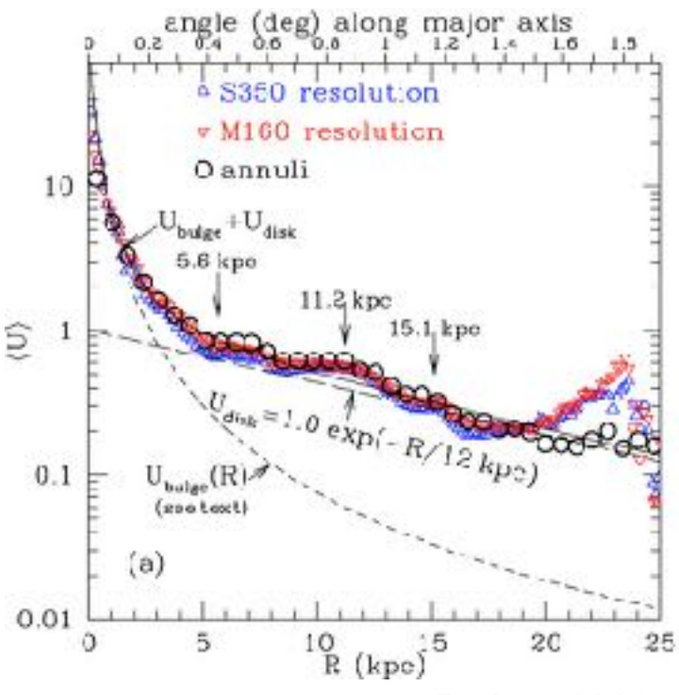


fitting results



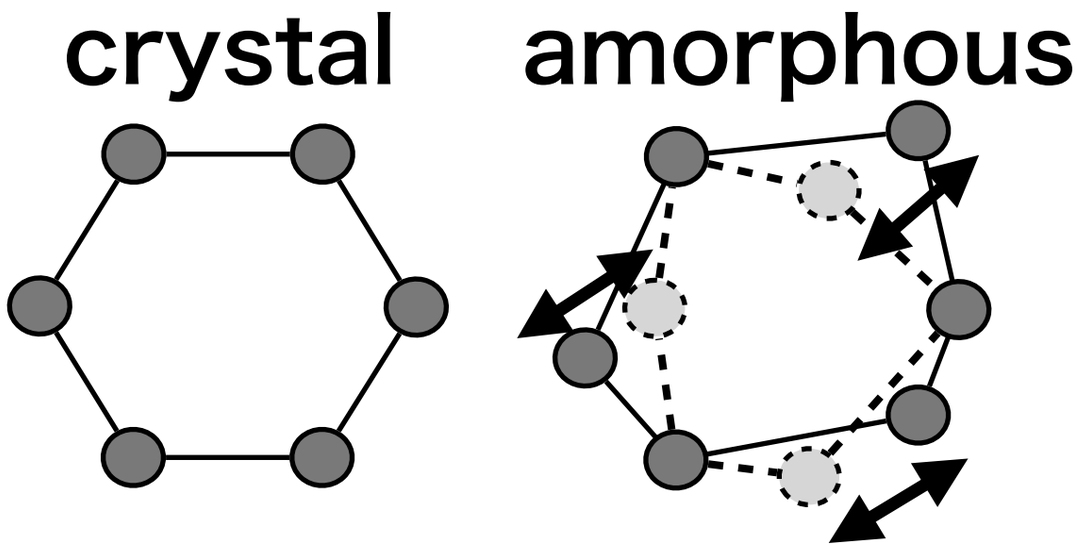


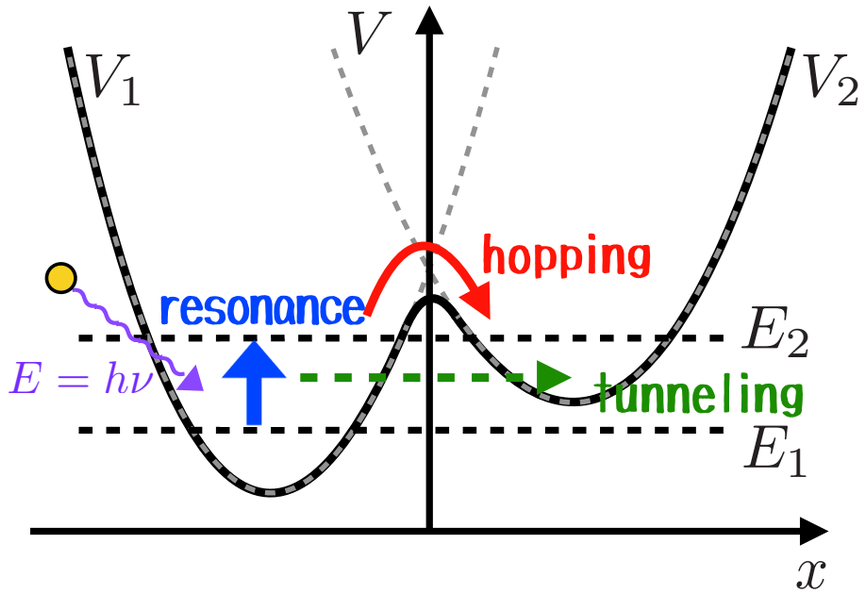




Draine+ 2014

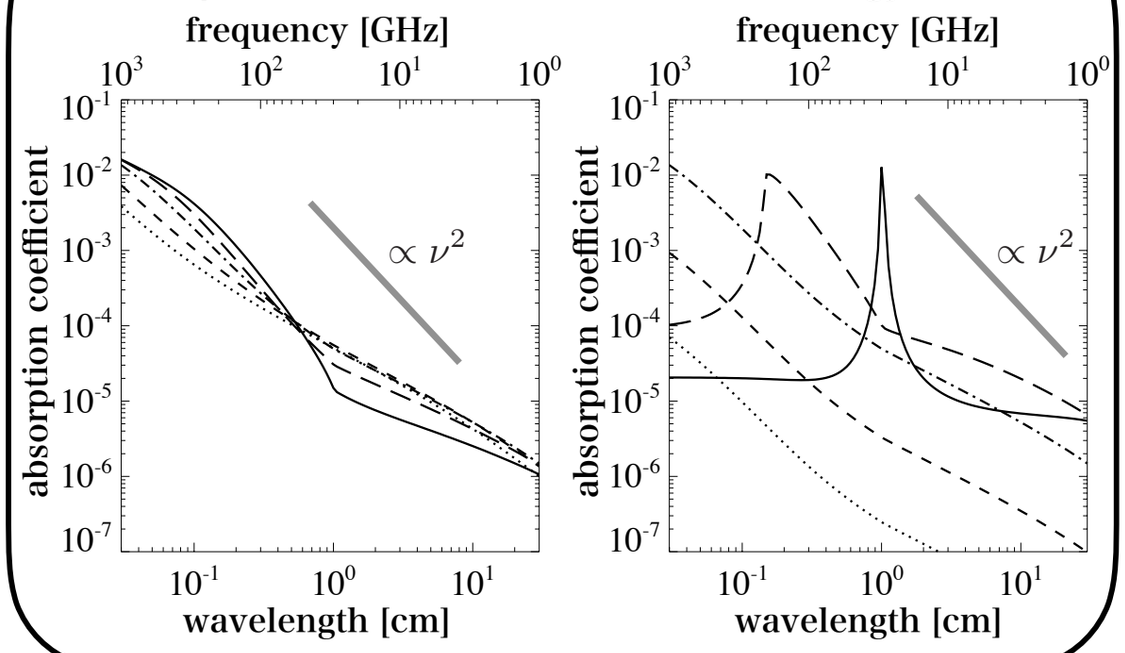
dust emissivity and polarized fraction



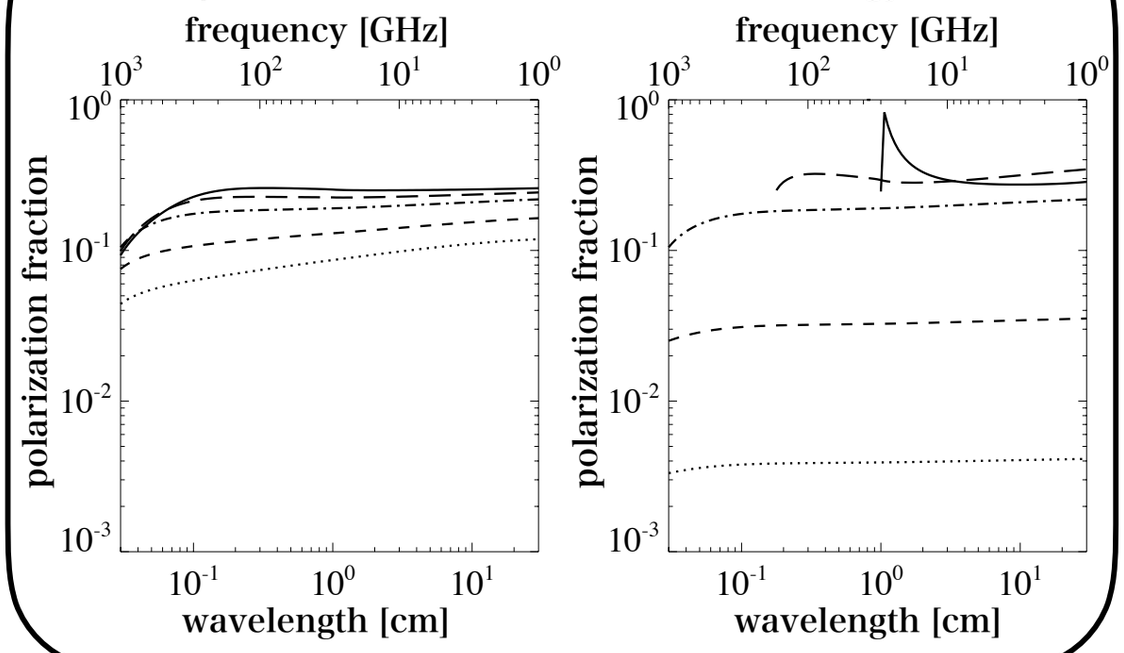


solve Bloch equation and calculate dielectric constant

absorption coefficient



polarization fraction



Activity Plan

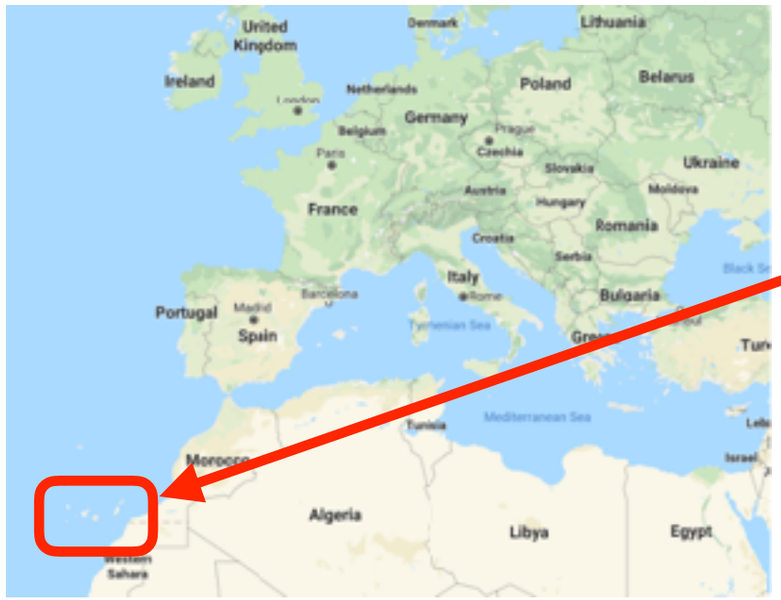
I will attend an international conference and make poster presentation (already accepted).
I'm going to go to the IAC from July onward (to be scheduled).

2018 Apr.

May	
Jun.	Cosmic Dust: origin, applications & implications date : 11-15 June place : University of Copenhagen
Jul.	international collaboration study at IAC
Aug.	
Sep.	

International Collaboration Plan

Instituto de Astrofisica de Canarias



Q-U-I JOint TEnerife experiment

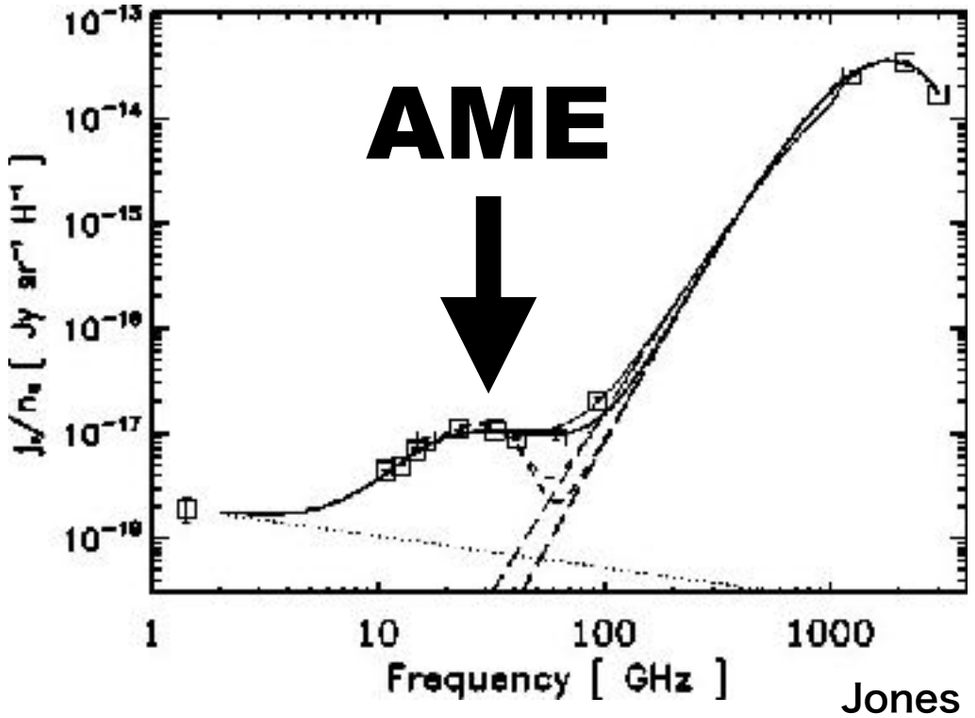
- QUIJOTE is a new polarimeter aimed to characterize the polarization of the CMB at low frequency (already running).
- GroundBIRD and QUIJOTE observe at the same site.
  —> GroundBIRD and QUIJOTE are complementary.

—>> I'm going to go to the IAC from July onward

International Collaboration Plan

Anomalous Microwave Emission is a component of diffuse Galactic radiation observed at frequencies in the range ~10-60GHz.

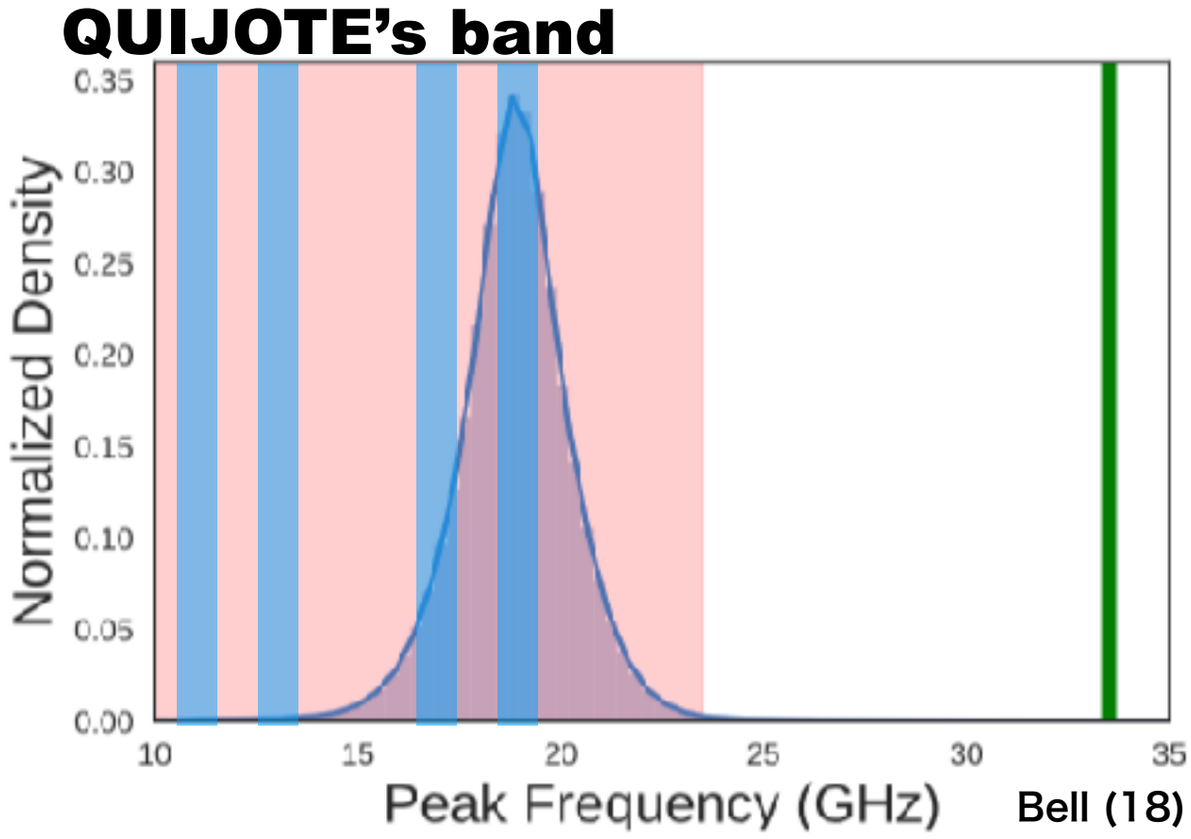
—> the origin of AME is unsolved
(someone suggests it seems dust)



Jones (09)

- AME is broken into two components; variable and fixed peak components
  —> two components model has not been verified with low frequency data

- thermal emission by amorphous dust is one of the candidates for AME
  —> We are going to verify our spectrum model for amorphous dust



Bell (18)

Summary

- I attended some conferences in previous semester.
  —>> I have been writing papers about them.

- I am going to participate in the international conference and make a poster presentation on June.
  —>> In this semester, we study for it.

- I will go to the IAC for the international collaboration study from July onward.
  —>> We are currently arranging the schedule.