# Self-introduction

**self-introduction**

- 1 min. each
- alphabetical order of family names

**Discussion of the style of the colloquium**

- current idea: guest + student talks

**Group photo (for web page)**

# KAH WUY CHIN

- Ph. D student of the University of Tokyo
- Supervisor : Ryohei Kawabe
- Research Subject :
  - Development of Millimeter/Submillimeter Wave Multichroic Camera
- Favorite Food : Ramen, Japanese Sake

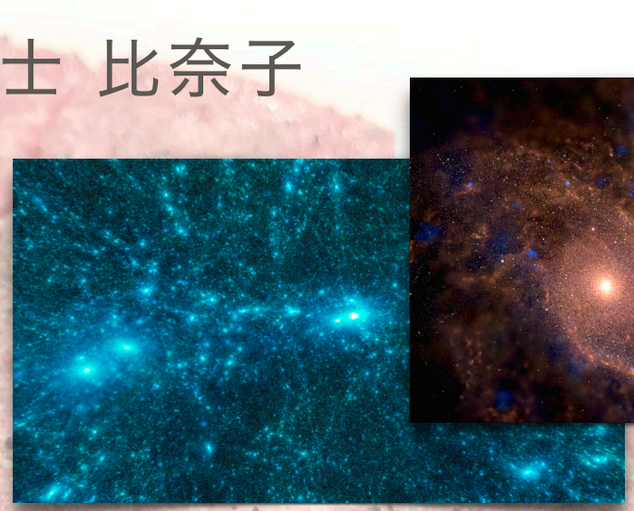
# FUKUSHI Hinako

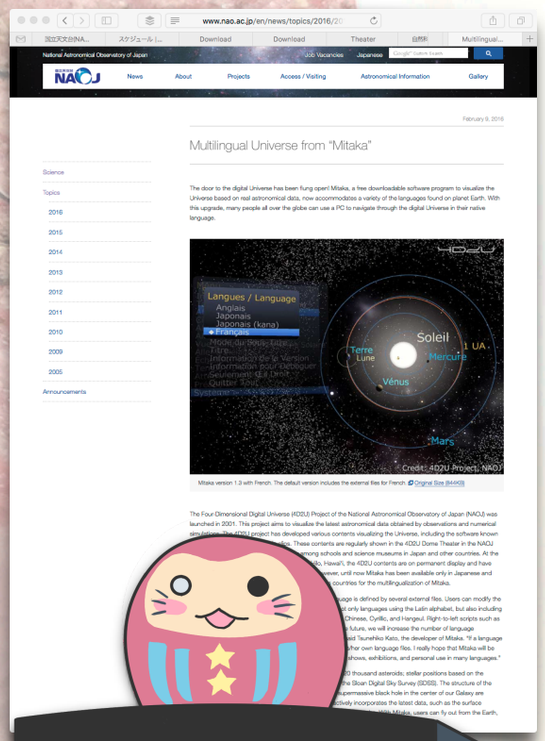
## 福士 比奈子

- Public Relation Officer of CfCA/4D2U

- My Jobs:

  Providing 4D2U contents,
  Supporting media coverage,
  Preparing press releases,
  Handling the open days,
  Editing website (for general public),
  Operating project's SNS (Twitter)
  etc…



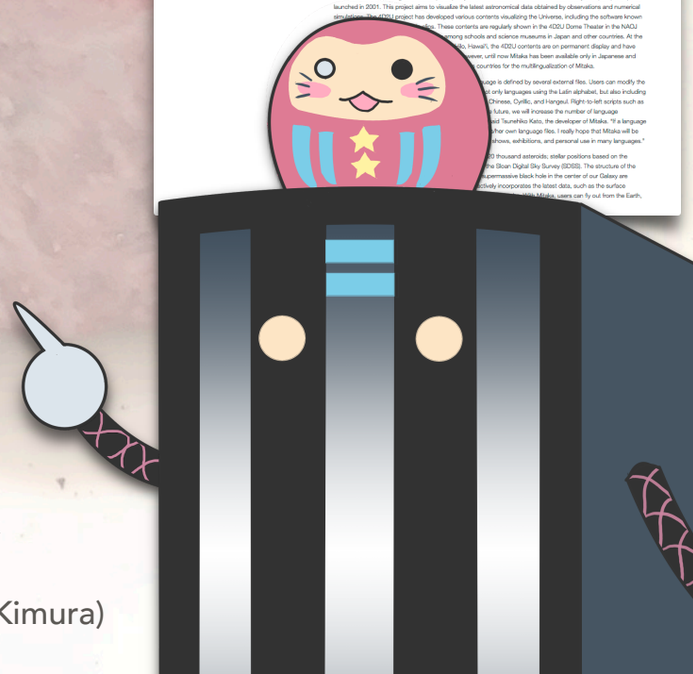

- Please let me know …
  - if you want to make a press release of your research
  - if you receive media coverages

    ※NAOJ has to give reports of appearances on media to MEXT（文科省）
  - if you win an award
  - if you have a chance to give a talk for general public (lecture at a science museum, science cafe, etc…)

- Twitter account:

  CfCA:@CfCA_NAOJ
  4D2U:@4d2u

Background image: Lean sirloin steak
@RYUEN (near by the Mizusawa Campus)



ATERUI-kun &
Daruma-kun
(Illustration by Yuko Kimura)

## 郭 康柔 (GUO KANGROU, Carol)

- **Affiliation:** M2  Dept. of Astronomy,
  Graduate School of Science, U-Tokyo
  DTA (science?), NAOJ
- **Research interest:** planet formation theories using N-body simulation
- **Hobby:** 80’s music, archery, etc.

よろしくお願いいたします。

Takashi Hamana / 浜名 崇

Assistant Professor / 助教

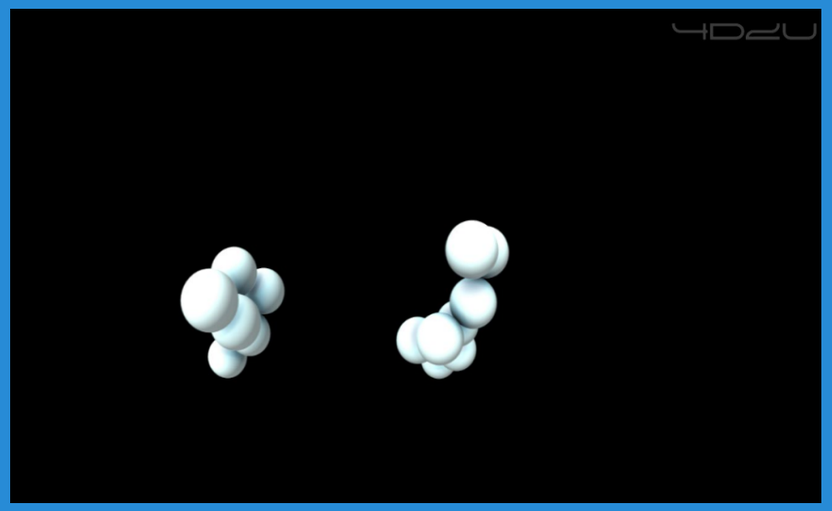
I have a bearded face sometimes.
時々ひげづらになります

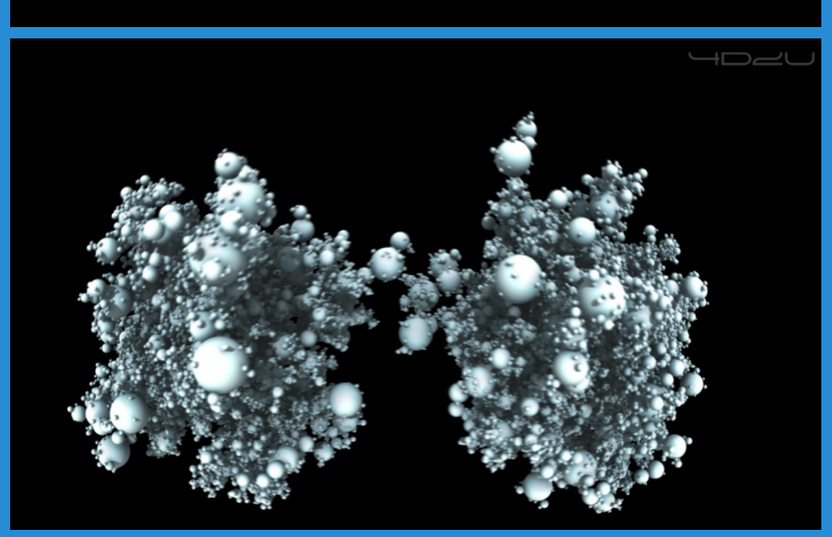
Research interest

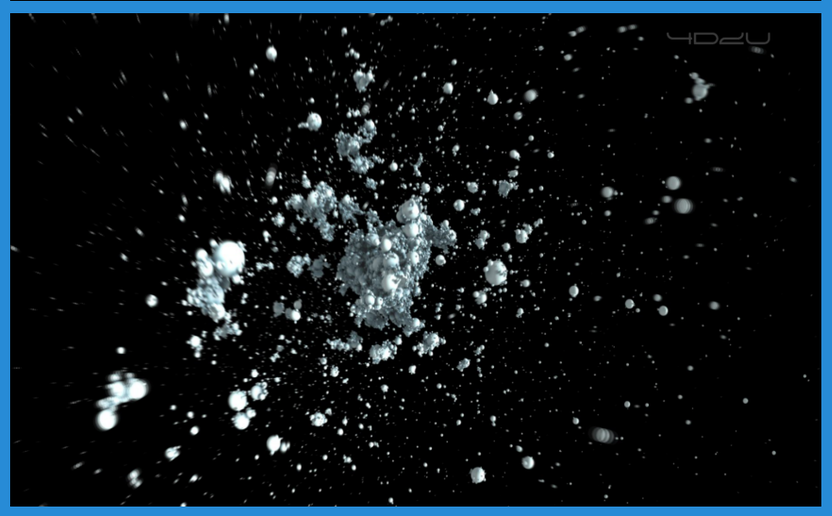
- Observational cosmology / 観測的宇宙論
- Dark matter structure formation and its relation with galaxy formation / ダークマター構造形成とその銀河進化との関係
- Numerical simulation of cosmological gravitational lensing / 宇宙論的重力レンズ現象の数値シミュレーション

# Satoki Hasegawa 長谷川 鋭 (4D2U Project Research Support Staff)

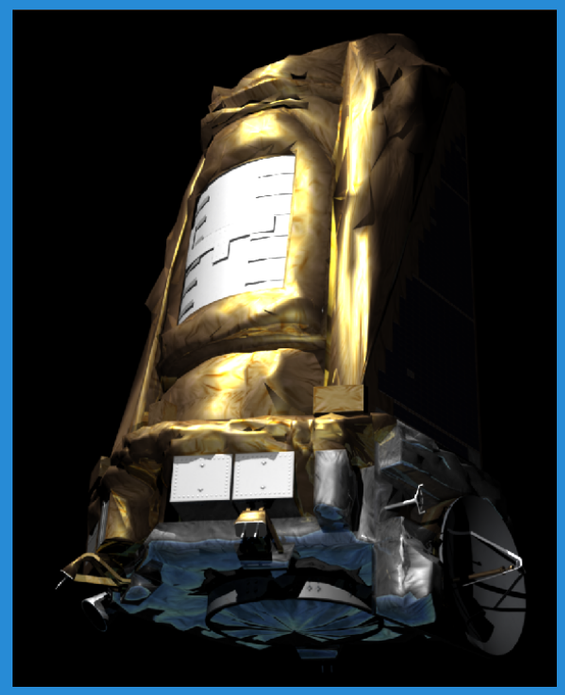
## Scientific visualization

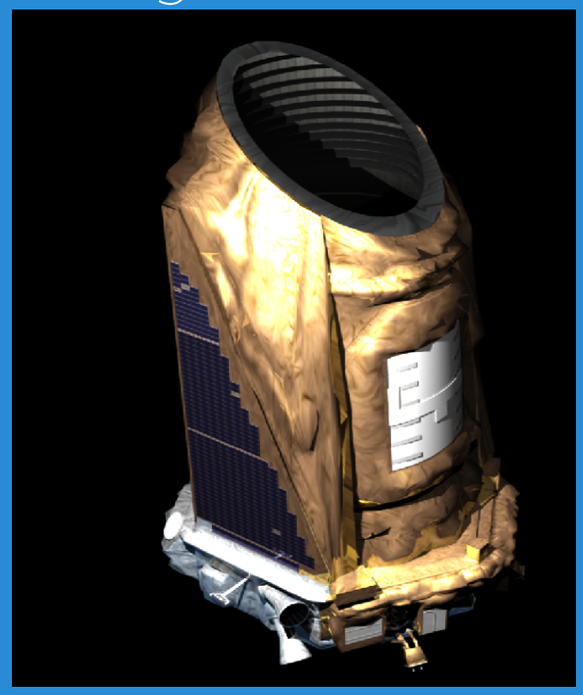


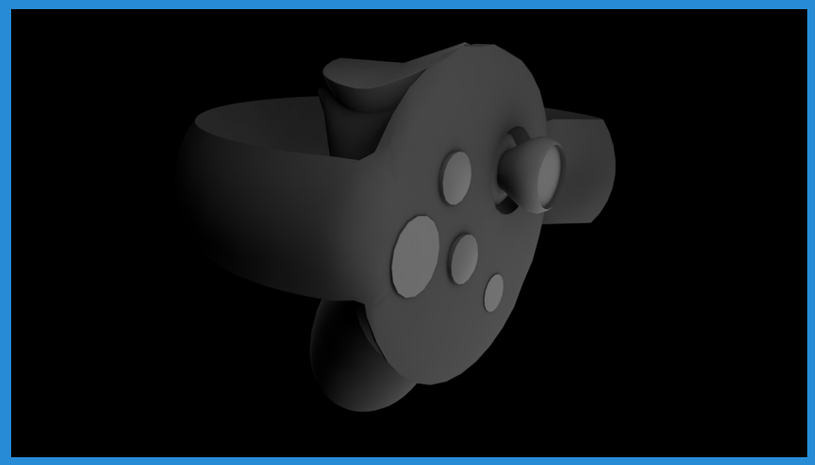




## 3DModeling







## Research

3DTV, Computer Generated Hologram

## Hobby

Movie create

# Hirotaka Hohokabe / 波々伯部 広隆

CfCA Senior Specialist

波々伯＝波波迦=ははか（Hahaka）
A native Japanese word which is the name of a plant *Padus grayana,*
上溝桜(ウワミズザクラ).
An item of a fortune telling(鹿卜 or 亀卜) was/is made of it.

*Padus grayana*
https://commons.wikimedia.org/wiki/File:Padus_grayana_a1.jpg

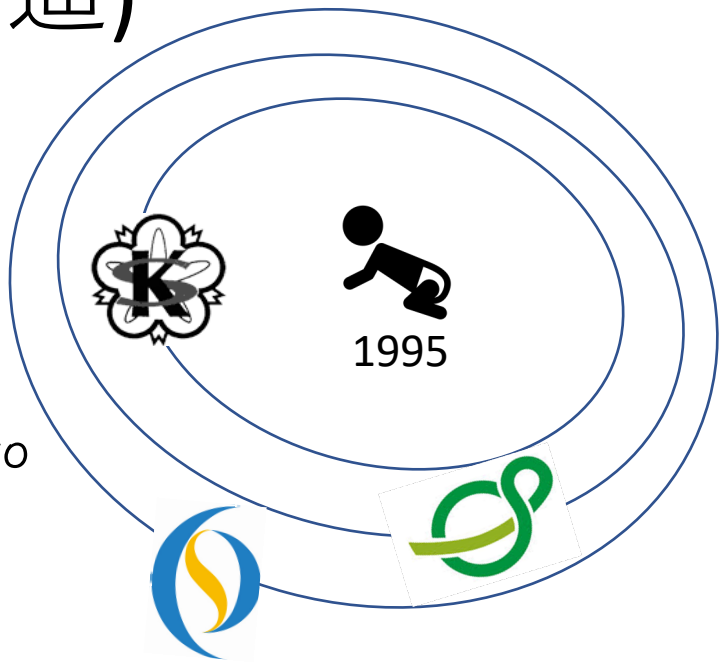
Research
- Giant planet formation

Other features：

※Bicycle

# HARUKA HOSHINO (星野 遥)

Supervisor : Prof. E.Kokubo




【 Personal History 】

- 2008-2013　Koishikawa Secondary School
- 2014-2017　Dept. of Physics, Saitama Univ.
  studied nuclear structure theory
- 2018-　---->　Dept. of Astronomy, Univ. of Tokyo
  Division of Science, NAOJ
  M2 student

【 Research Interests 】

- planetary system formation
- changing the orbit of a planet
- …

【 Hobby 】

- trumpet
- bicycle(ママチャリに乗ってどこまでも)

…。。。

ishikawa(absent)

ito

# Kazunari Iwasaki (岩崎一成)

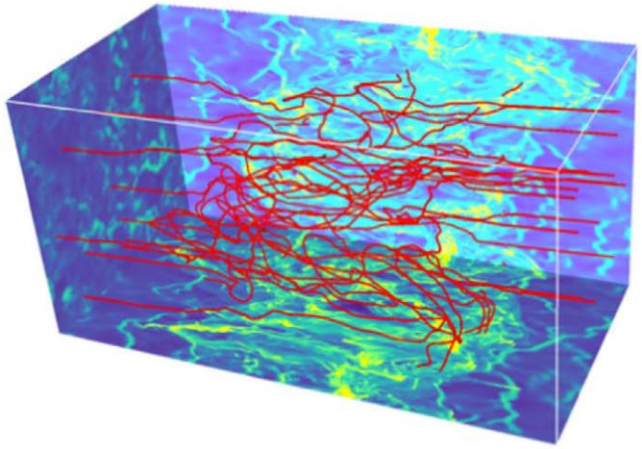
## Assistant Professor in CfCA

**Career**

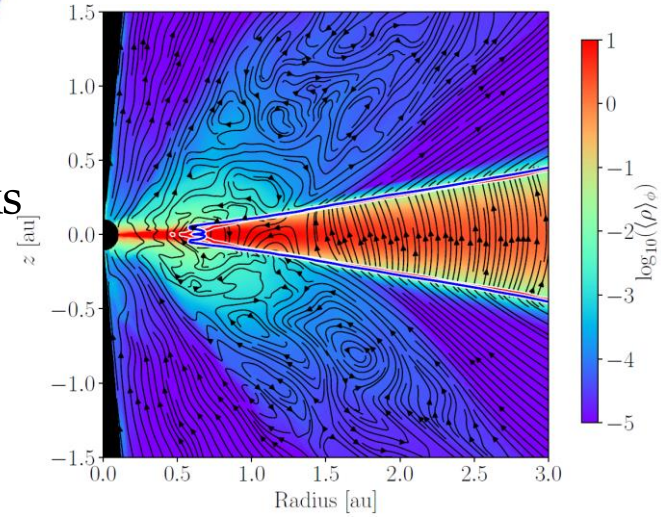
- Bachelor, Master, Doctor in Osaka University
- Nagoya University → Doshisha University → Osaka University

**Ongoing Work**

✓ Formation and Evolution of Molecular Clouds and Cores



✓ Global Non-ideal MHD Dynamics in Protoplanetary Disks
✓ Chemical Structure of Debris Disks
✓ Development of Numerical Methods (SPH)



kajino

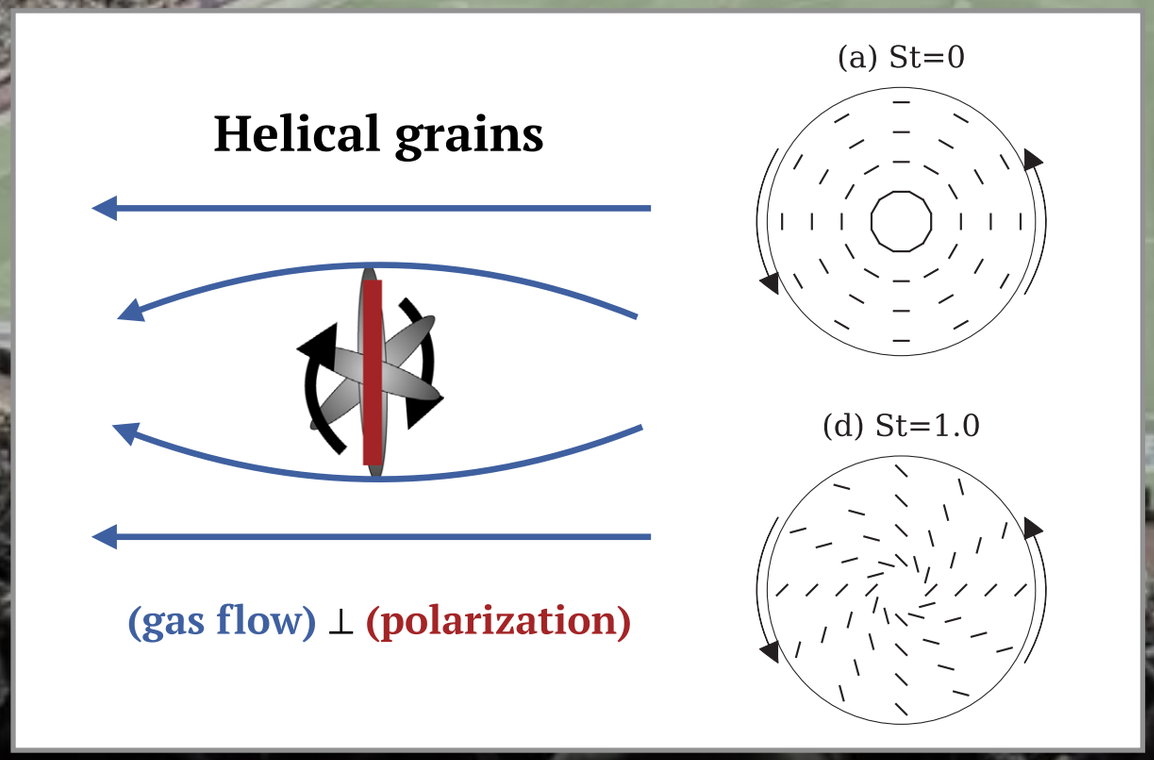
NAME

# Raiga Kashiwagi

# - Akimasa Kataoka (Assistant Professor)

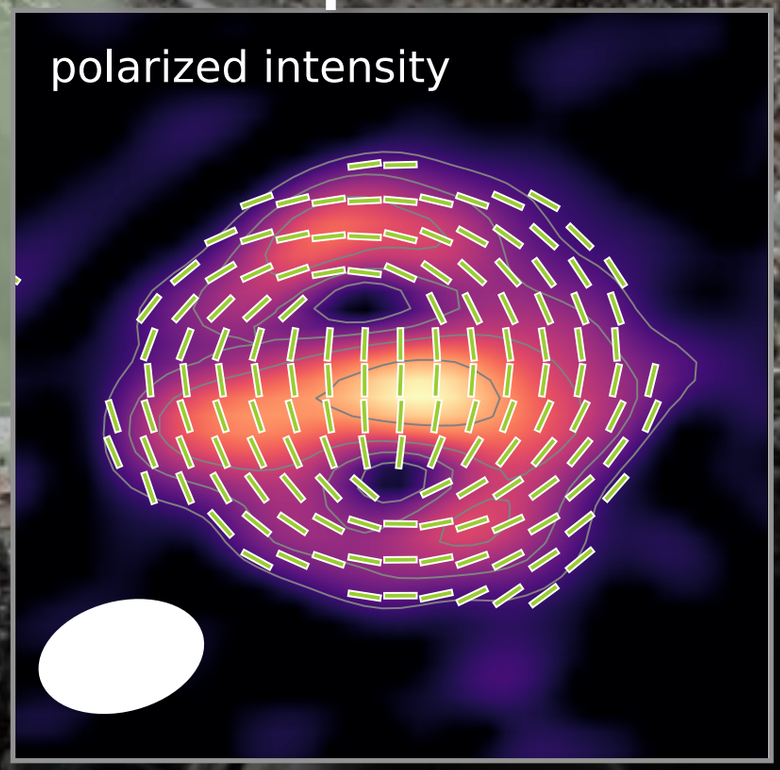
- working on planet formation; dust coagulation, radiative transfer, ALMA observations
- Planet-forming disks with ALMA: golden age!

## Prediction: alignment with gas flow




Kataoka et al. 2019, ApJL

## ALMA observation of AS209 polarization




PI: Kataoka
Mori, Kataoka et al. in prep

# Tsunehiko Kato (4D2U Project)

## Research

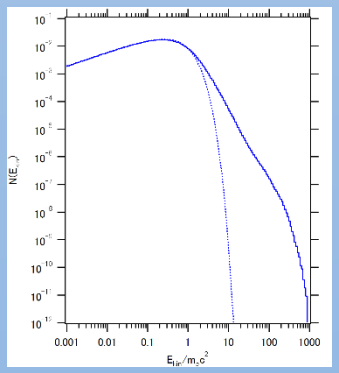
### Research Field

- Astrophysical Plasmas
- High Energy Astrophysics

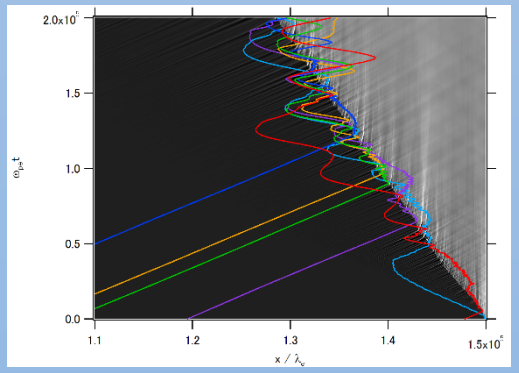
### Subjects of Research

- Collisionless Shocks
- Particle Acceleration
- Kinetic Plasma Instability

PIC Simulation of Particle Acceleration in Collisionless Shocks



Energy Spectrum of Particles

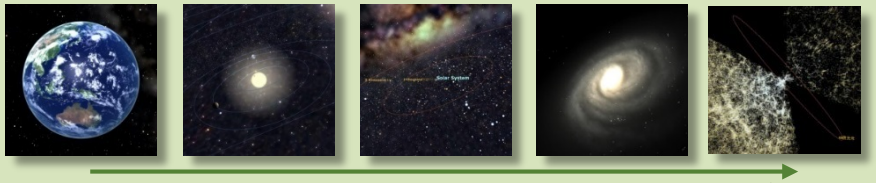


Trajectories of Accelerated Particles

## 4D2U Project

### Main Job

- Developing ``**Mitaka**'' Software



Earth — LSS of Universe

- Visualize Universe
- Using Observational Data and Theoretical Models
- Navigate from Earth to Large Scale Structure of Universe
- Used in 4D2U Dome Theater
- Free Software (Windows)
- Supports VR


**Virtual Reality (VR) mode**

4D2U Dome Theater: a stereoscopic dome theater

# Ryohei Kawabe (Prof. of NAOJ) 川邊 良平

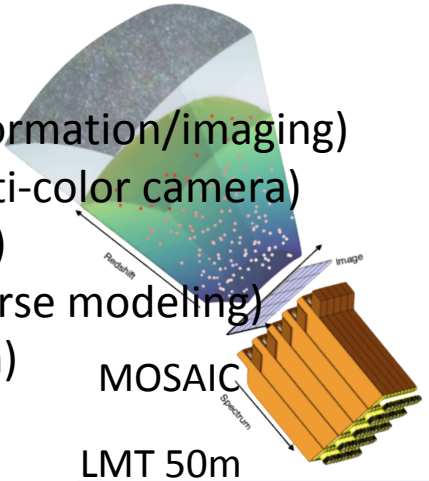
大型サブミリ波望遠鏡
LST
LARGE SUBMILLIMETER TELESCOPE

**<Research Interest and on-going projects involved>**

- New 50m-Class Submm Single Dish Telescope, LST (Kawabe+ 2016, SPIE Proc. 9906, 990626)
- Formation of Planets & Stars (e.g., sub-stellar mass objects; Kawabe+ 2018, ApJ, 866, 141)
- Redshift determination and CO-SLED with 2mm Receiver (B4R) on LMT (PI of JSPS program)
- Blind Line-emitter search at high-z with DESHIMA/MOSAIC on LMT (co-PI of JSPS program)
- Develop. of Millimetric Adaptive Optics (co-PI of JSPS program)
- Develop. of Multi- color millimeter/submillimeter camera (with Tai Oshima, ATC/NAOJ)


**<Graduate Students +>**

- Masayuki Yamaguchi (D2, Univ. Tokyo/NAOJ; planet formation/imaging)
- Kahwuy Chin (D1, Univ. Tokyo/NAOJ; develop. of multi-color camera)
- Huang Shuo (M1, Univ. Tokyo/ALMA-J; high-z galaxies)
- New student (M1, Nippon W. Univ.; imaging using sparse modeling)
- Hara Chihomi (NEC/U. Tokyo; low-mass star formation)




MOSAIC

LMT 50m

**<Research Career>**

1987-1997 Research Staff of Nobeyama Millimeter Array (NMA)/NRO
1998 -2006 ASTE project Leader, ALMA-J project manager,
ALMA-J project scientist/ARC manager
2007-2011 Director of Nobeyama Radio Observatory
2012-2013 Joint ALMA Observatory Chief Scientist
2014- Planning of LST project

# Tomohisa KAWASHIMA (project assistant professor at CfCA)

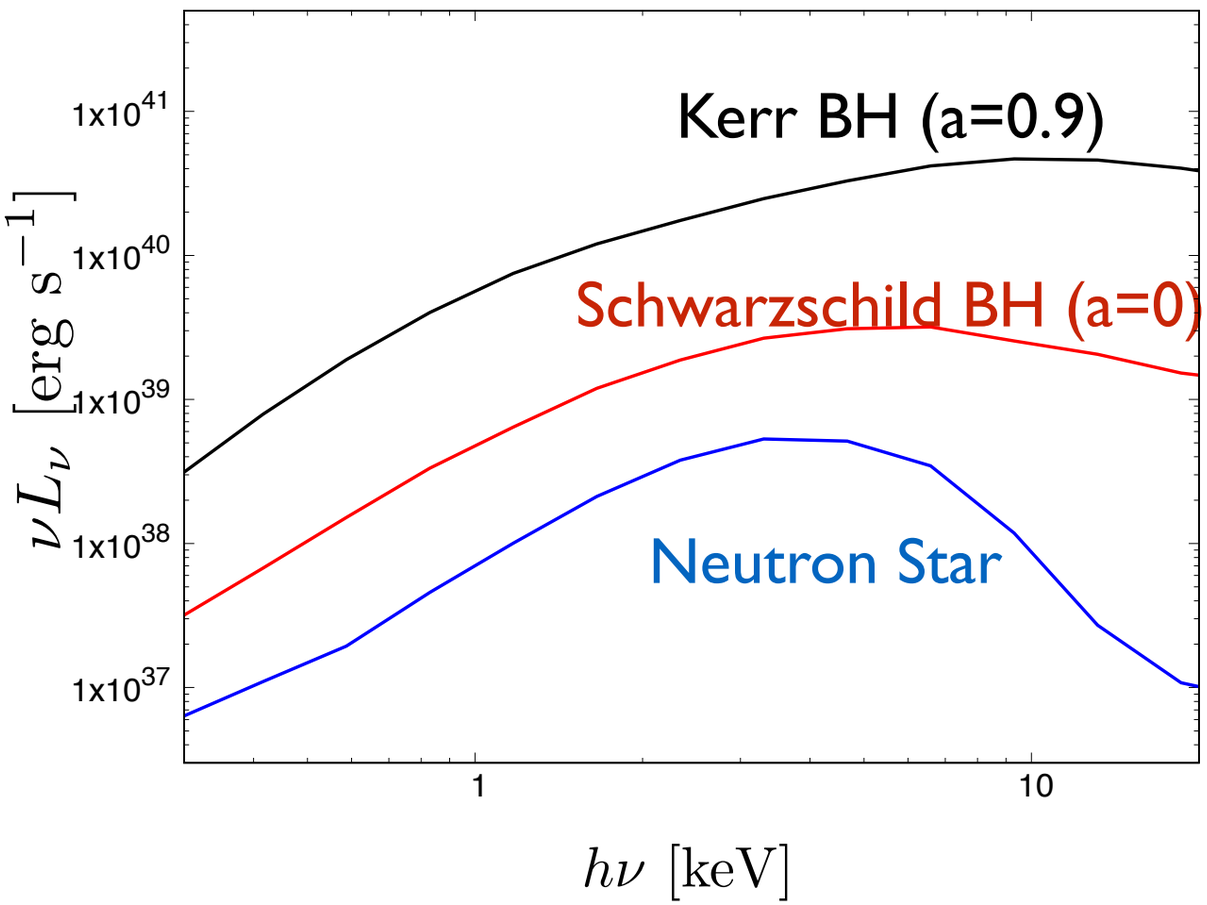
- Simulations of accretion flows and outflows around black holes and neutron stars
- Code development: a general relativistic ray-tracing radiative transfer code "RAIKOU"

## RAIKOU code

GR radiative transfer w/ Bremsstrahlung emission/absorption, Synchrotron emission/absorption, Compton/inverse-Compton scattering

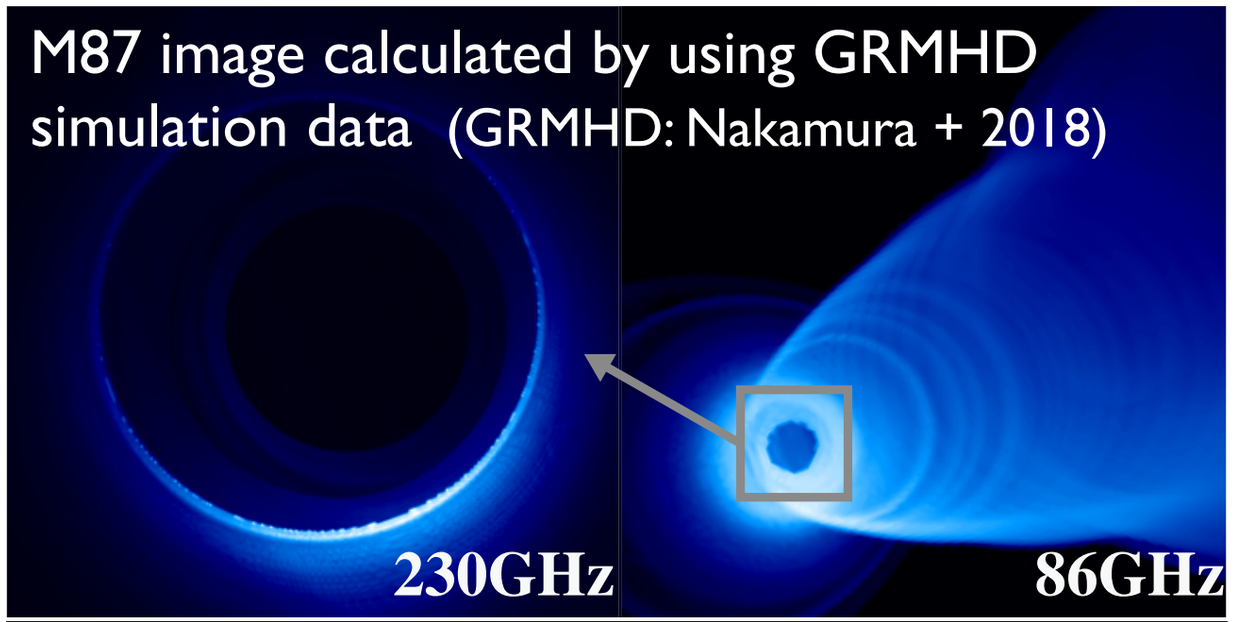
### SED

X-ray spectra of super-Eddington accretion flow (post-process of GRRMHD simulation)

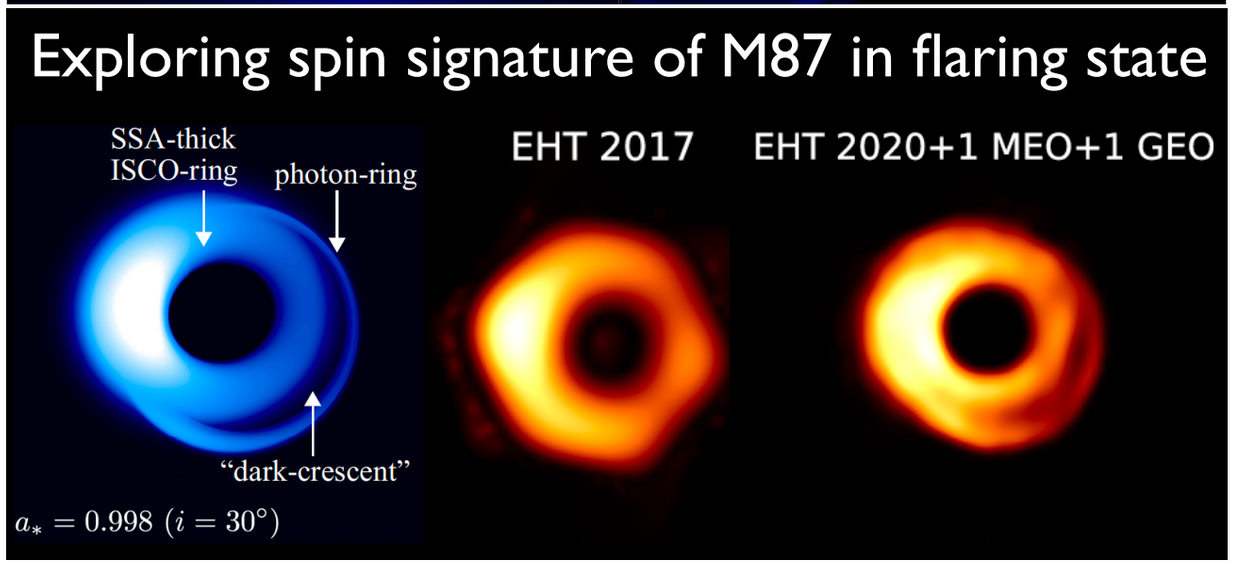



### imaging

M87 image calculated by using GRMHD simulation data (GRMHD: Nakamura + 2018)




Exploring spin signature of M87 in flaring state



# Self-introduction

- **Name**:

  Shinichi Kinoshita

- **Old school**:

  Tokyo university of Science (Professor Matsushita's office)
  Graduation research theme is "X-ray flare from YSOs"

- **Current grade**:

  First-year master's student at Tokyo university

- **lab**:

  Nakamura Professor's laboratory

  Future research content is about
  identification of molecular-cloud core

# Towards a General Theory for Planet Formation

## Eiichiro Kokubo

- Formation of planetesimals (Taki, Hasegawa, Takahashi, Michikoshi)
- Formation of gas giants (Guo, Hohokabe, Lin)
- Formation of ice giants (Shibata)
- Formation of close-in super-earths (Hoshino, Ogihara, Matsumoto, Nakano, Suzuki)
- Giant impacts for lunar formation (Hosono)
- Gap formation in planetary rings (Michikoshi)
- Planet formation around AGNs and pulsars/white dwarfs (Wada, Tsukamoto, Moriya)
- Observation: exoplanets around M dwarfs (IRD)

- Hobbies: scuba diving, travel, noodles, yoga, ...

# Takayoshi Kusune（楠根貴成）

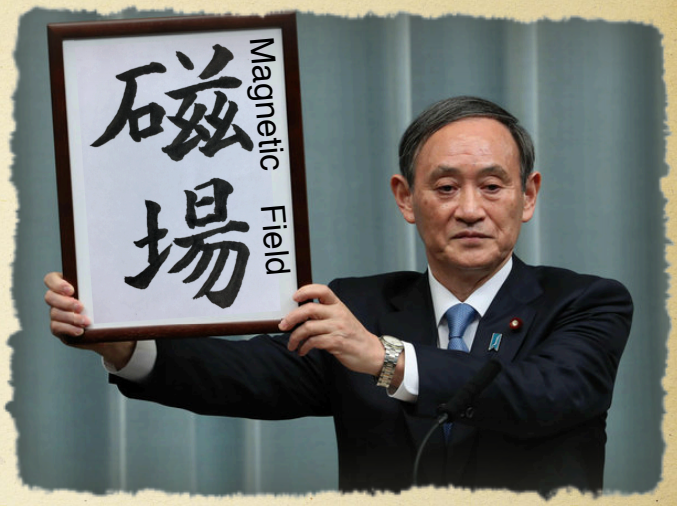
## History

1988-2007: Kitakyushu

2007-2011: Kobe Univ. (Y. Itoh)

2011-2017: Nagoya City Univ. (K. Sugitani)

2017-　　: NAOJ (F. Nakamura)

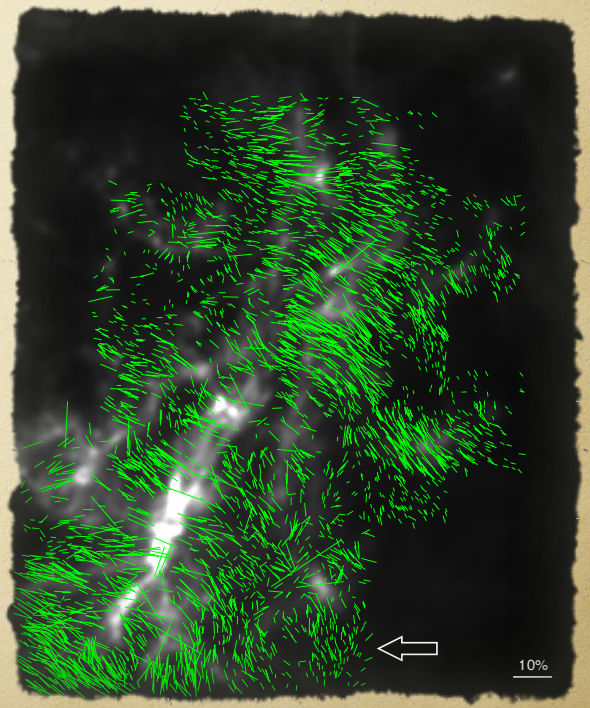



## Research Interests: Magnetic Field

Revealing roles of magnetic fields

- in structure formation of molecular clouds
- in the star formation

with Nobeyama 45m telescope
& IRSF 1.4m telescope @ SA




Kusune et al. 2019

# LEE, SEOKHO

- Post-Doc. in ALMA Project group
- Korean (Seoul National University)
- Supervisor: Hideko Nomura
- Research Interests:
  - Low Mass Star Formation/Disks
    - Class I → Class II
  - ALMA Observations
  - Modeling for Protoplanetary Disks
    - Line Radiative Transfer
    - Gas Energetics
    - Chemistry

DC1

罗煜东

ルオユードン

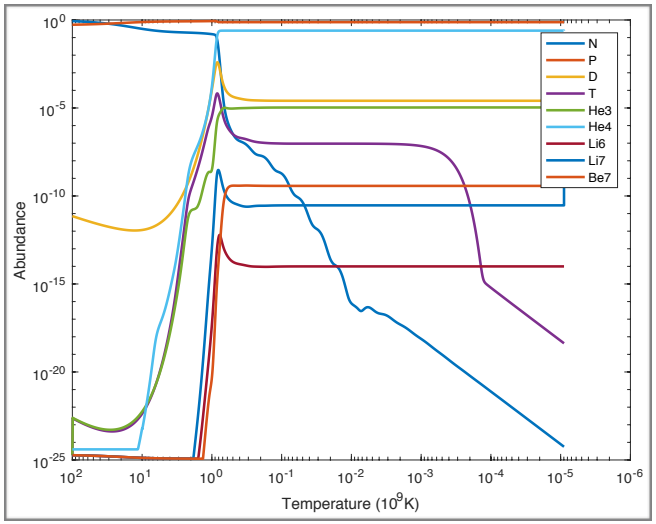
LUO, Yu dong

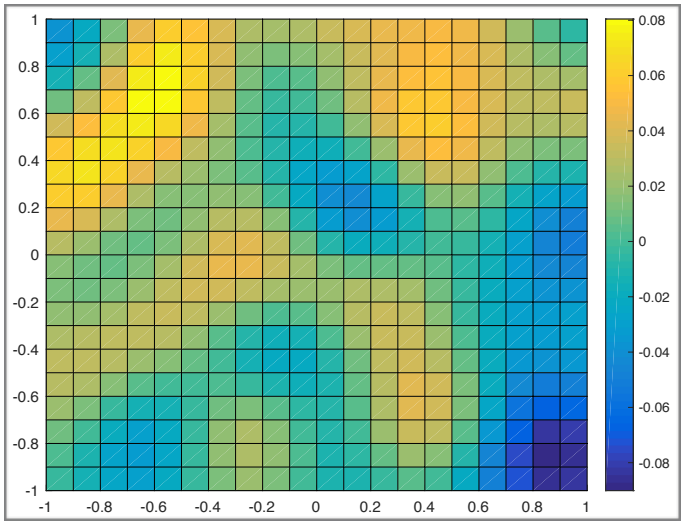
科学研究部

梶野組

Kajino's GROUP

# Research



Big-Bang Nucleosynthesis + Primordial Magnetic Field

# Non-Research

NETFLIX

NINTENDO SWITCH

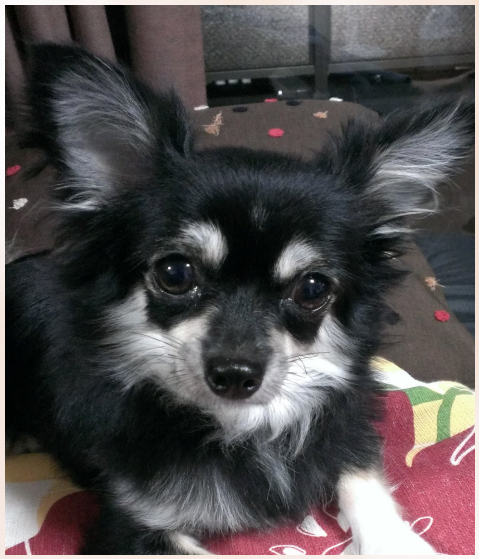
PlayStation

# 森　寛治 Mori, Kanji

Ph.D. student

Dept. of Astronomy, University of Tokyo

Division of Science, NAOJ



Gri (2015-)

**Research Interest**:

Type Ia supernova

Big Bang nucleosynthesis

(s-Process, Pop III stars, ...)

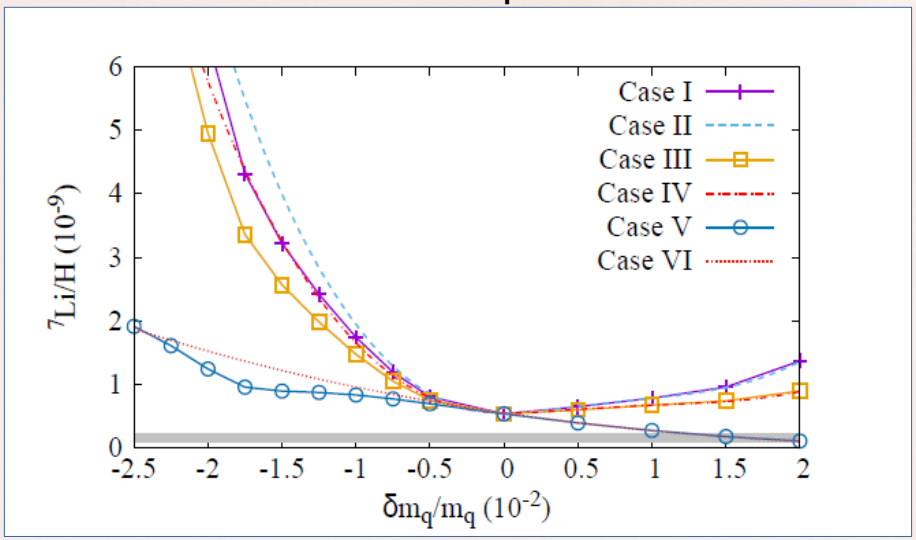
**Hobby**:

Science fiction

(e.g. Stephen Baxter, Greg Egan, Cixin Liu, EnJoeToh)

Animes, Novel games, VTubers, and other *otaku* activities

$^7$Li abundance in BBN with quark mass variations



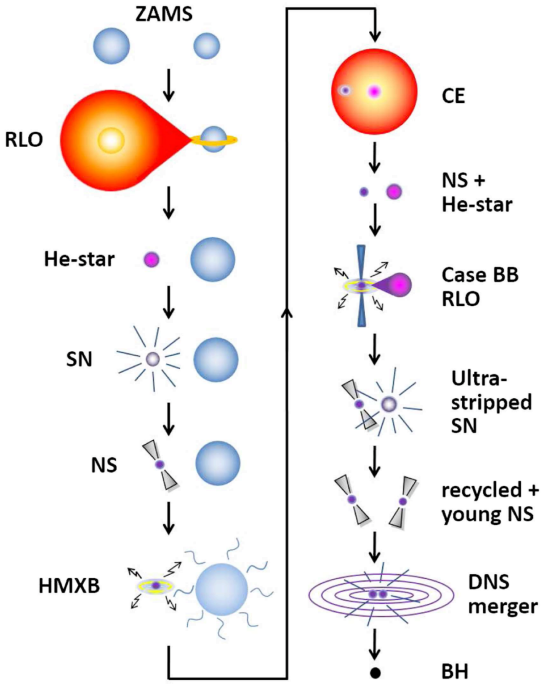

Mori & Kusakabe, submitted to PRD. (arXiv:1901.03943)

morino

# Takashi Moriya (守屋 尭), assistant professor

Takashi José Moriya Sierra in Spanish

2005 - 2009: undergrad at U. Tokyo
2009 - 2013: PhD at U. Tokyo (Kavli IPMU)
2013 - 2016: postdoc at U. Bonn, Germany
2016 - 2019: NAOJ fellow at DTA
2019 - : assistant professor at DTA/DoS




**research interest**

supernovae
stellar evolution
transient surveys with Subaru (optical, NIR), WFIRST (NIR), etc.

**wish for this year**

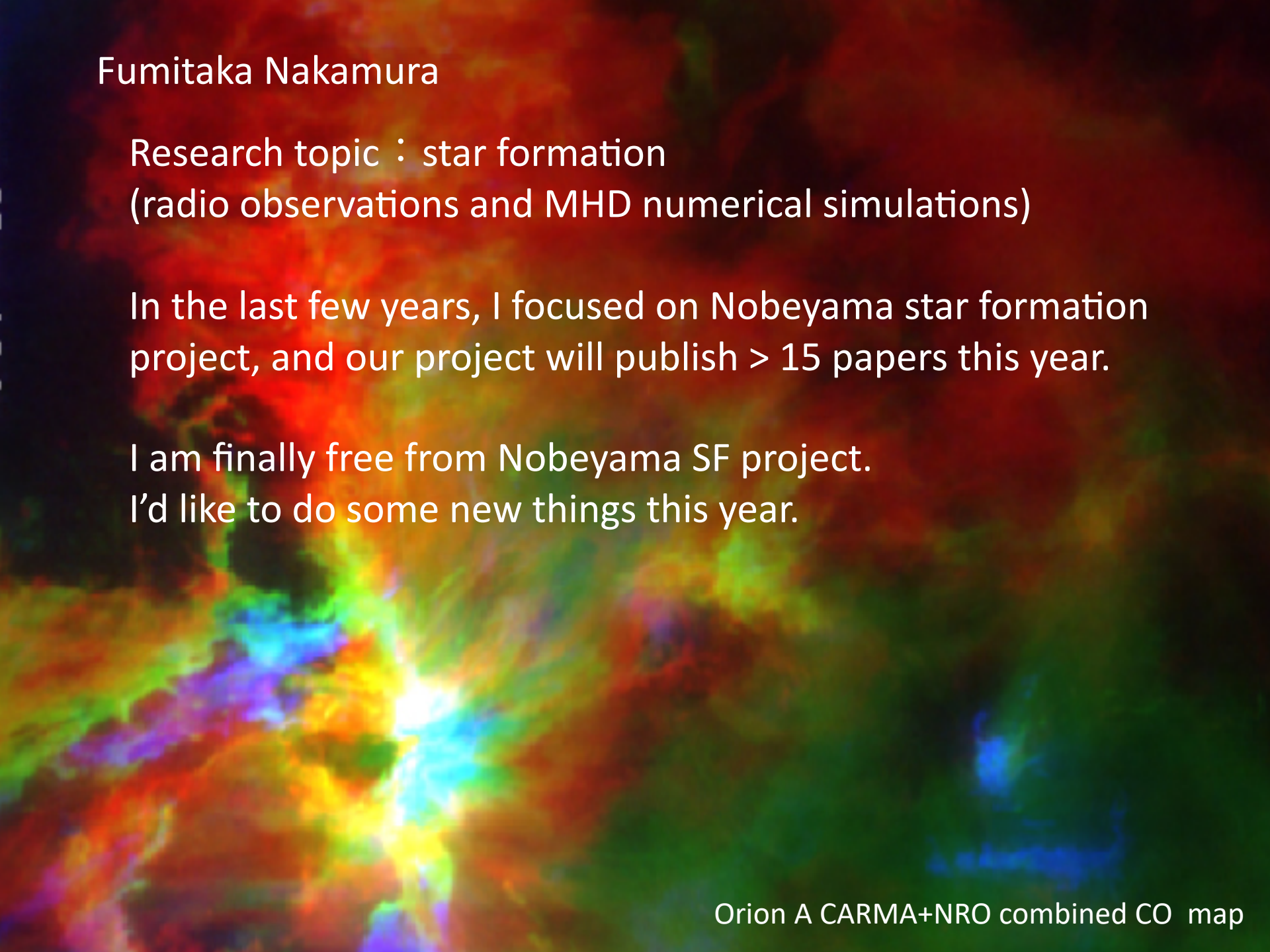
*successful HSC transient survey*
It was canceled last year due to volcano activities at the Big Island.
Aiming for the highest redshift SN discovery
*work on something related to planets*

Fumitaka Nakamura

Research topic：star formation
(radio observations and MHD numerical simulations)

In the last few years, I focused on Nobeyama star formation project, and our project will publish > 15 papers this year.

I am finally free from Nobeyama SF project.
I'd like to do some new things this year.

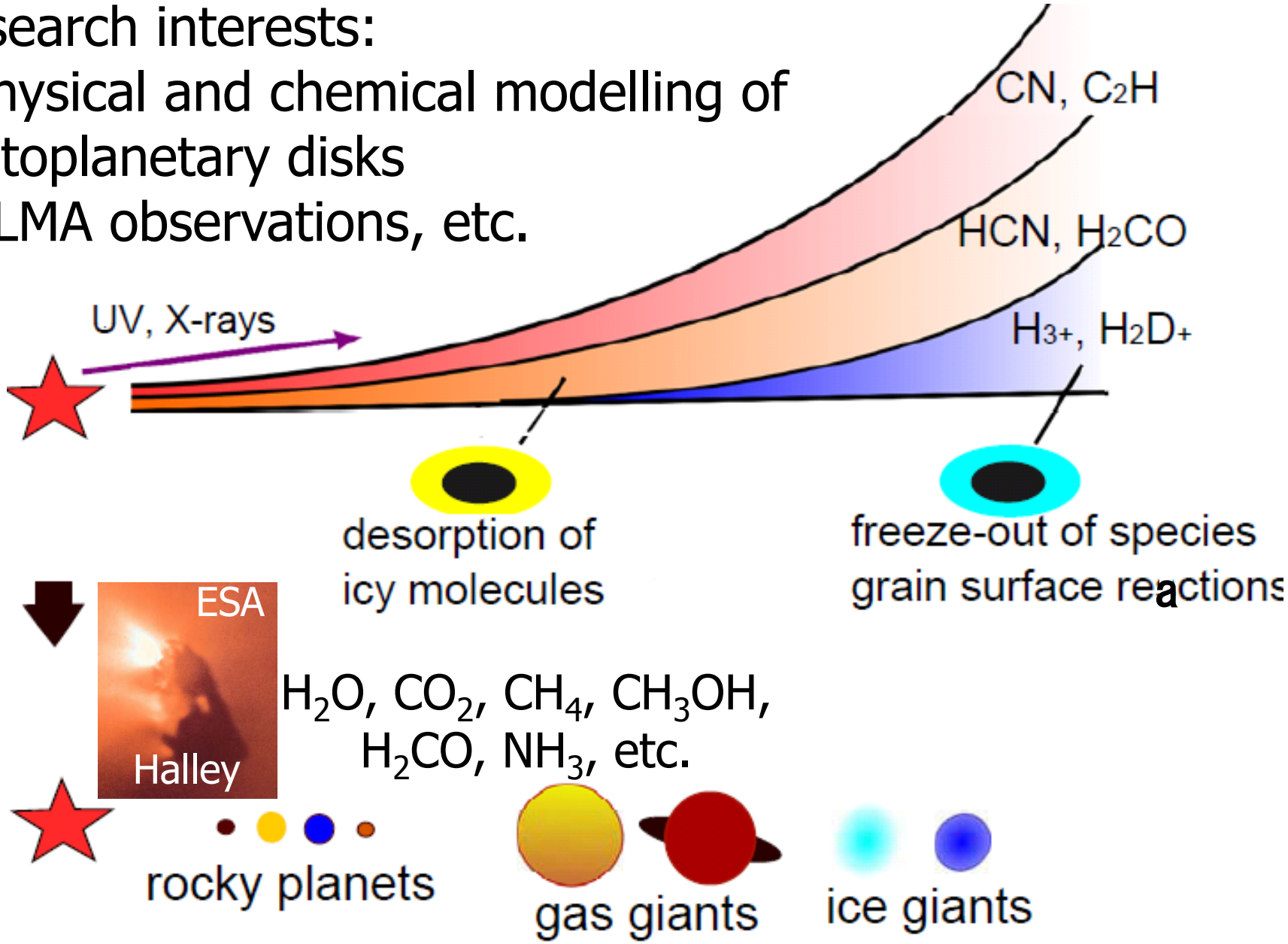


Orion A CARMA+NRO combined CO map

nakayama

# Hideko Nomura

Research interests:
- Physical and chemical modelling of protoplanetary disks
- ALMA observations, etc.



# Takaya Nozawa (野沢 貴也), project researcher

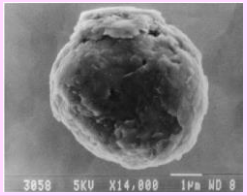
"Exploring hierarchy and overall in natural science with computer simulations"

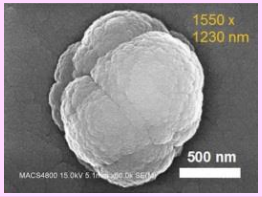
「シミュレーションによる『自然科学における階層と全体』」

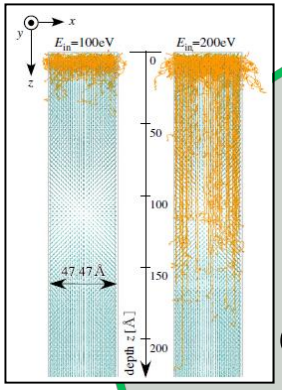
NAOJ

interstellar dust
planet formation
observational effect

cosmic dust

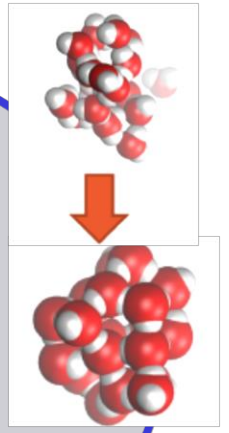





dust destruction
by sputtering

dust formation
via molecules



National Institute
for Fusion Science

Institute for
Molecular Science

# Masahiro Ogihara　荻原 正博

## ❑ Personal history

1982-2002: **Chiba**, **Tokyo**, **Hiroshima**, **Fukuoka**, **Kagawa**

2002-2011: **Tokyo** Tech. (S. Ida)

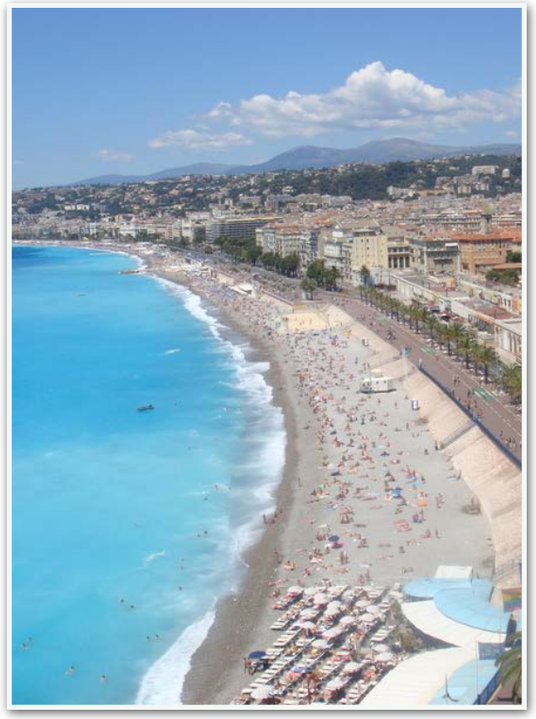
2011-2014: **Nagoya** Univ. (S. Inutsuka, T. Suzuki, H. Kobayashi)

2014-2016: Observatoire de **Nice** (A. Morbidelli, T. Guillot, A. Crida)

2016-　　: NAOJ (E. Kokubo, T. Suzuki, Y. Hori, Y. Matsumoto, Y. Fujii)

## ❑ Research

- planet formation (terrestrial planets, giant planets, exoplanets)
- satellite formation
- N-body simulation using GRAPE
- disk evolution, atmosphere accretion
- Subaru IRD, JUICE



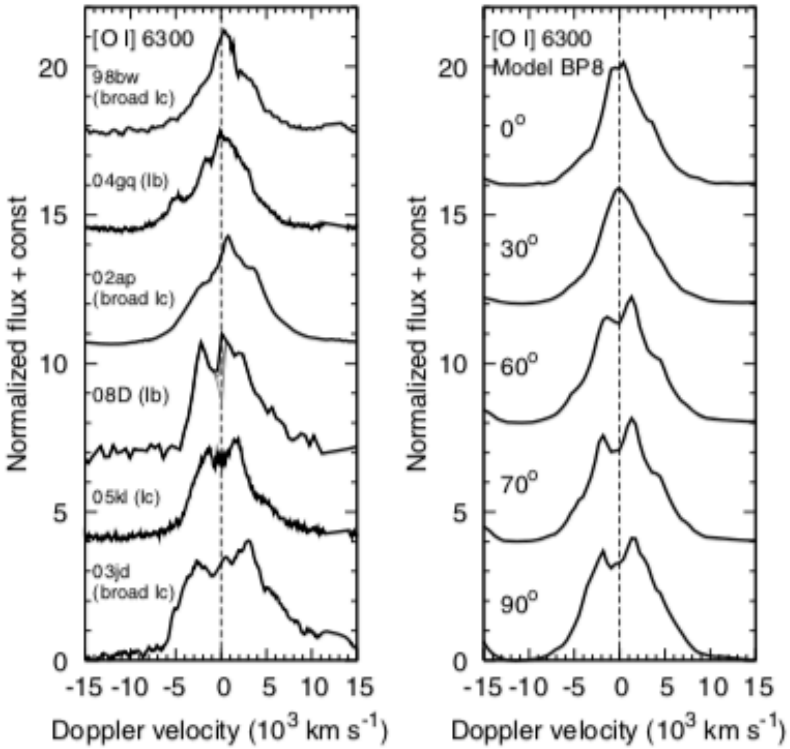
# Yukari Ohtani (CfCA)

keyword

- core-collapse supernova, radiative transfer calculation

recent work

- relation between **morphology of striped-SN** and shape of nebular emission line
  - single peak / double peak
-




(Tanaka+2009)

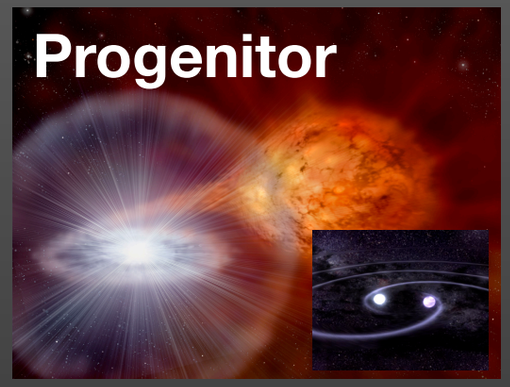
oshigami

oh?黄?

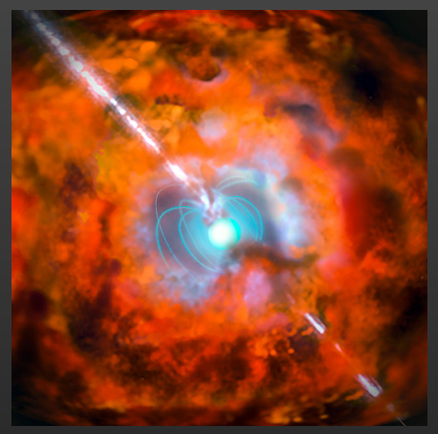
# Research Highlights

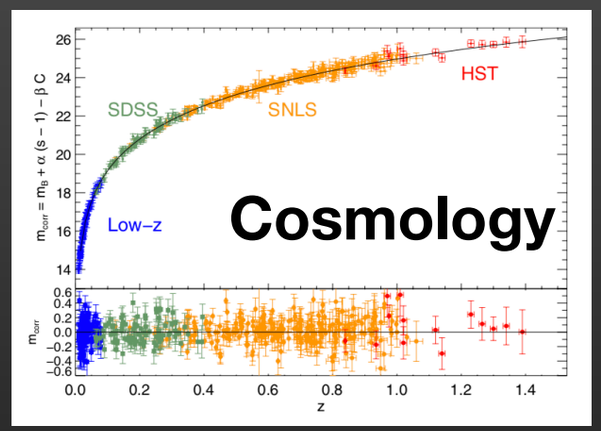
Yen-Chen Pan (EACOA Fellow)

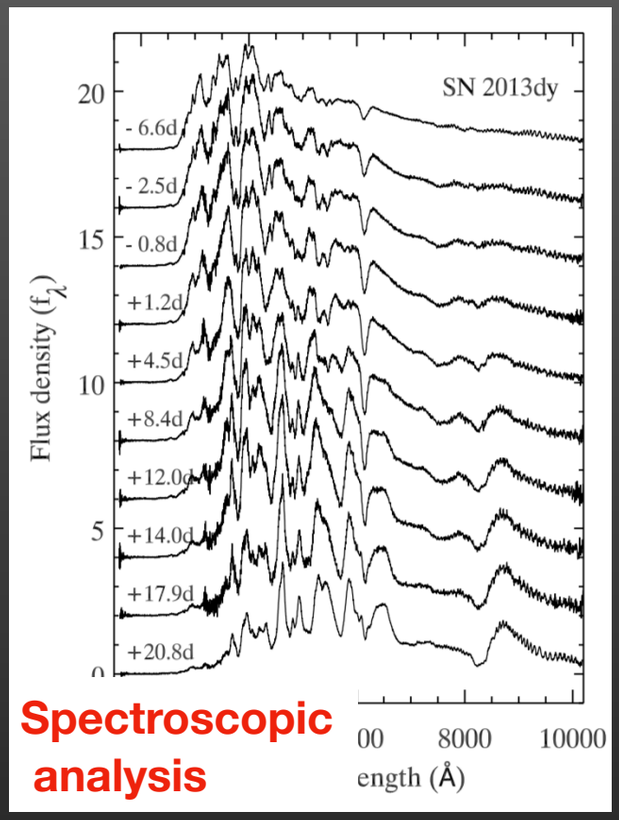
- **Supernova**
  - SN progenitor
  - SN cosmology
  - Host galaxy
  - Spectroscopic analysis



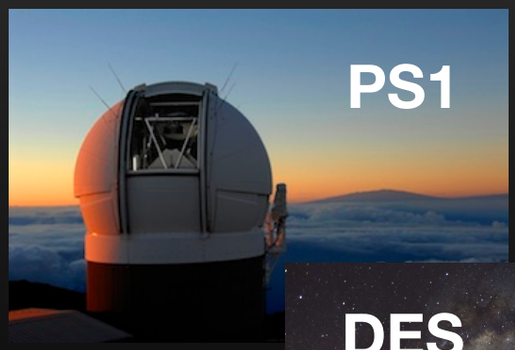






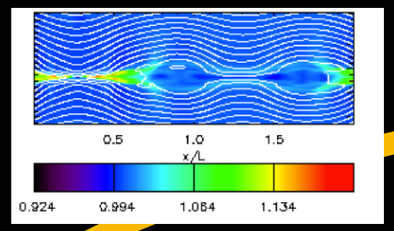

- **Transient survey**
  - Pan-STARRS1 survey
  - Dark Energy Survey
  - Subaru HSC survey
  - LIGO/Virgo survey

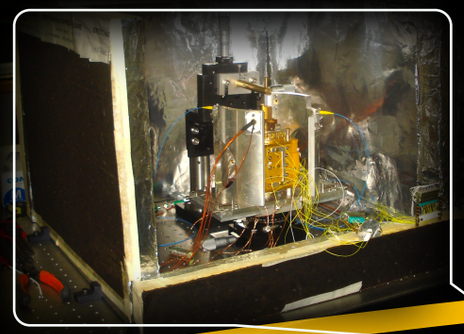




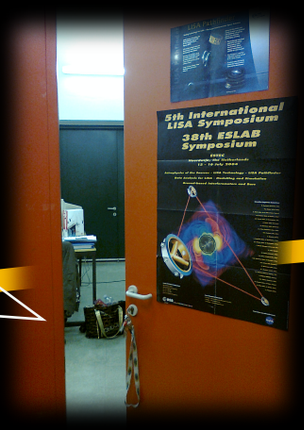

## LIGO/Virgo GW events


Master 2013
Reconnection



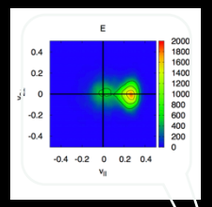



Batchelor 2011
Lisa Pathfinder




Passion for
Astrophysics

Born in Firenze
Italy

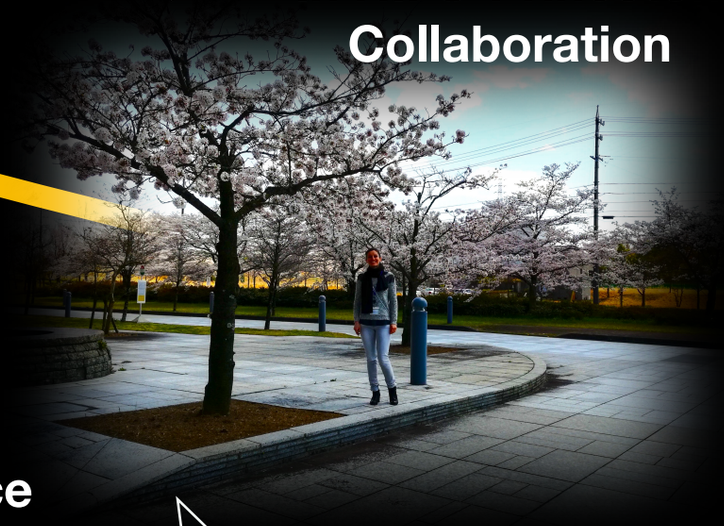



PIC Sim for
reconnection

JPL Los
Angeles
2013

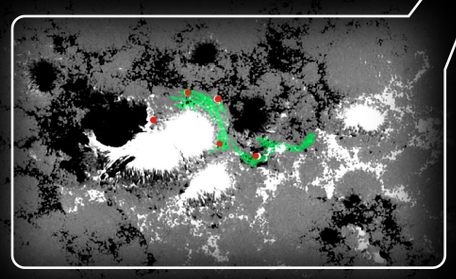
PHD Rome 2016

Postdoctoral Fellow
In NIFS-Princeton
Collaboration



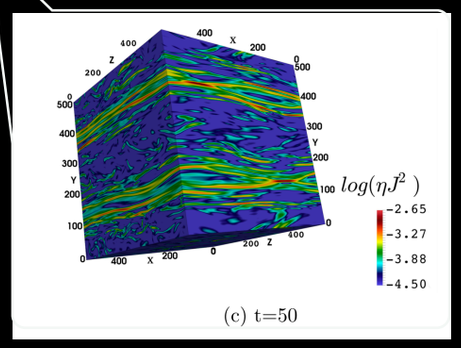
Today…IRCC Fellow in
NAOJ Japan,
Princeton, MAX Plank

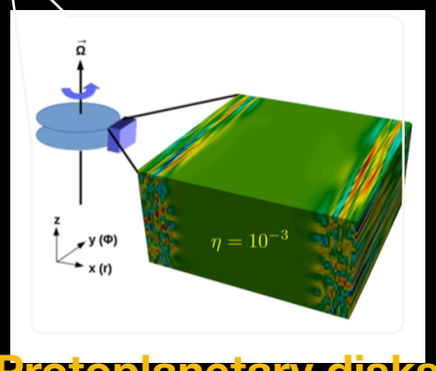

MRI in PPDs
Sim of Magnetic
Reconnection



Flare forecasting

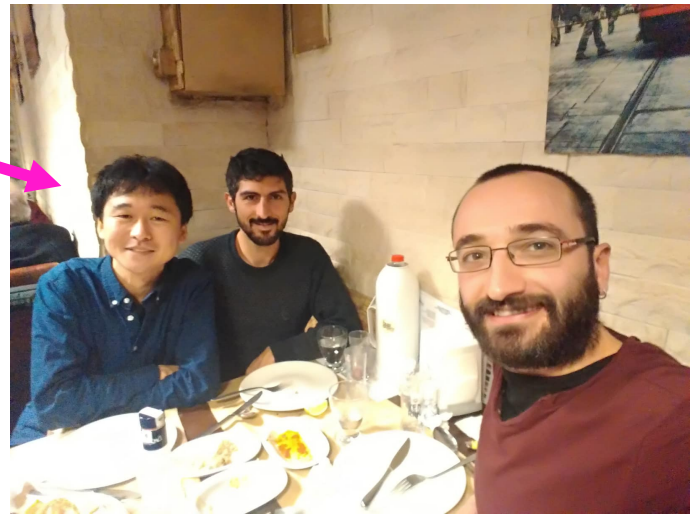
Sim of Turbulence



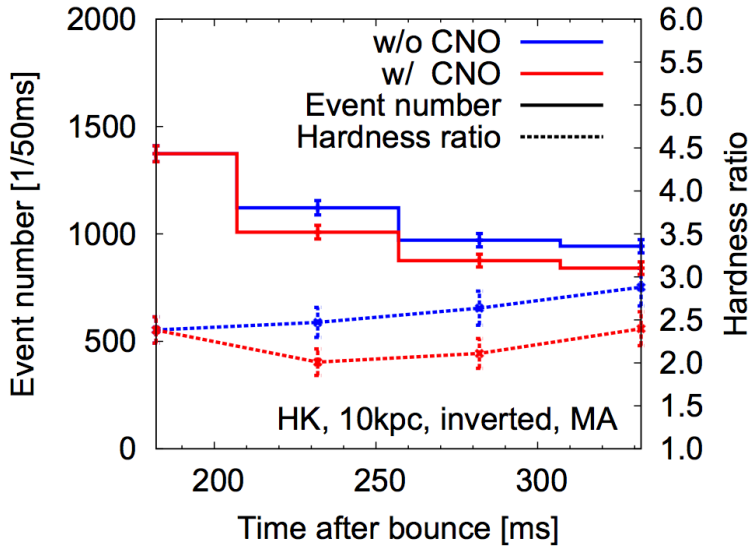

Protoplanetary disks
MRI in MHD

# Hirokazu Sasaki (東大D3)



## Study :

- Collective neutrino oscillations in core-collapse supernovae
- Nucleosynthesis

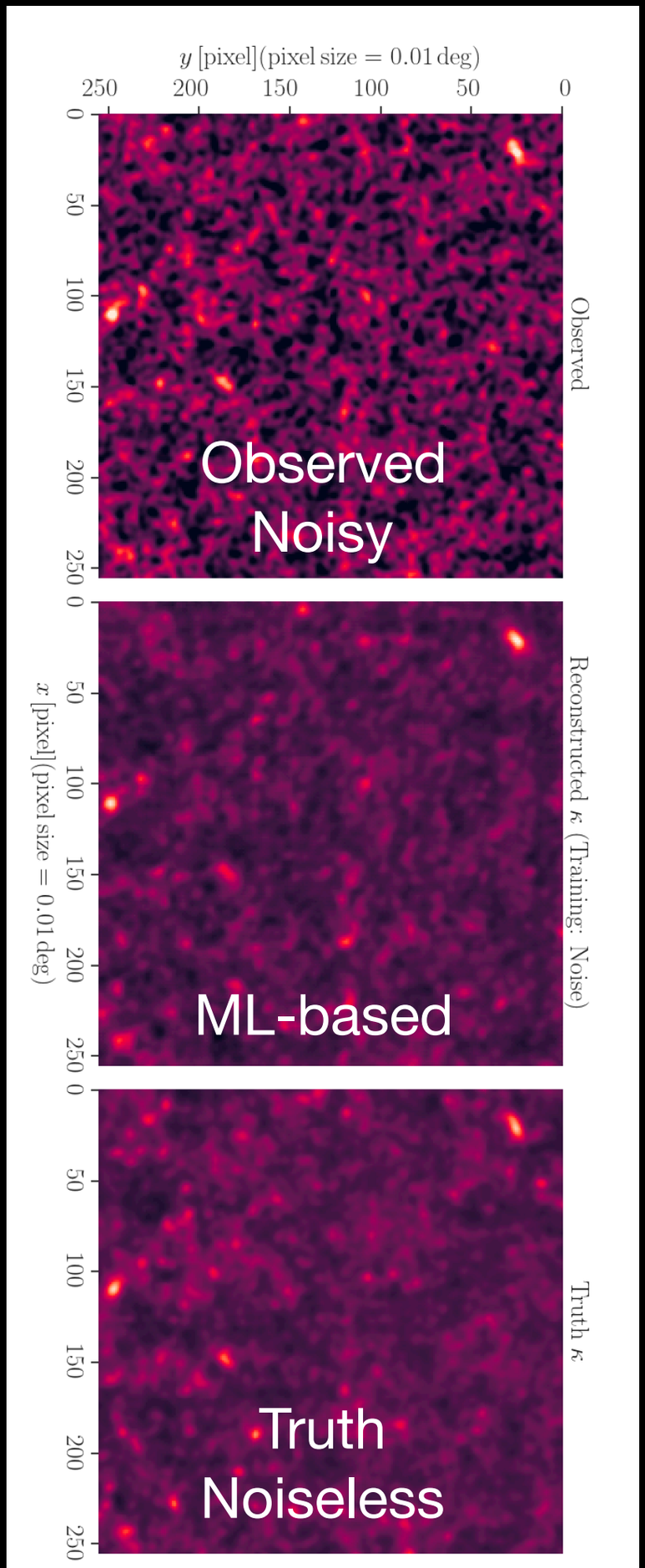



## Favorite things :

# Brief Introduction of My Research

Masato Shirasaki
(National Astronomical Observatory of Japan)

- A postdoc at NAOJ, got my Ph.D. at University of Tokyo on 2015 March
- Main interest: Observational cosmology & Large-scale structures in the Universe
- Method: Multi-wavelength astronomical data and gravitational lensing effect on distant galaxy's shape
- Approach: Statistical, numerical, and data-driven
  - Analyzing big data (e.g., ~10 billions of particles in sims and ~ 10 millions of real galaxies)
  - Involved in Subaru Hyper Suprime-Cam project
  - Modeling with machine learning

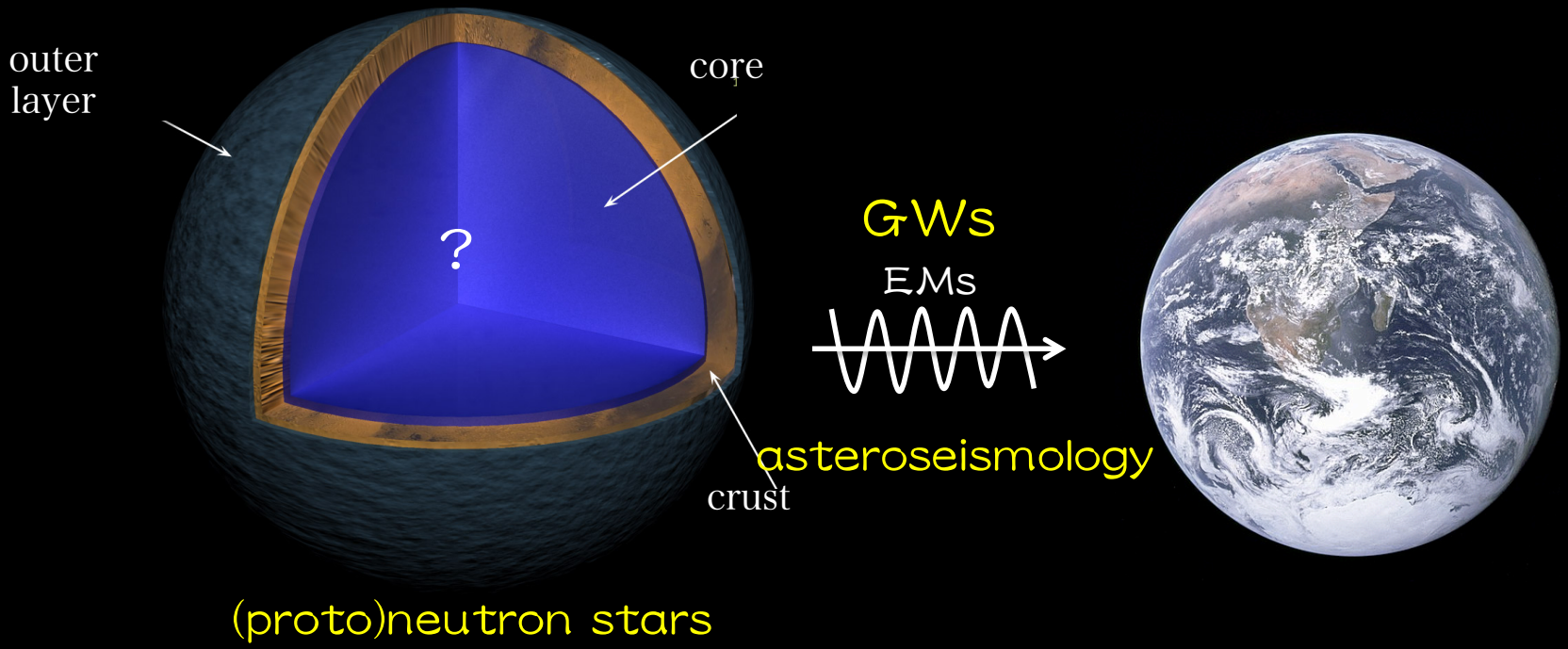


soma

# Physics of (Proto-) Neutron Stars

Hajime SOTANI (祖谷元)

- keyword
  - (proto)neutron stars
  - asteroseismology
  - gravitational waves



# Naonori Sugiyama

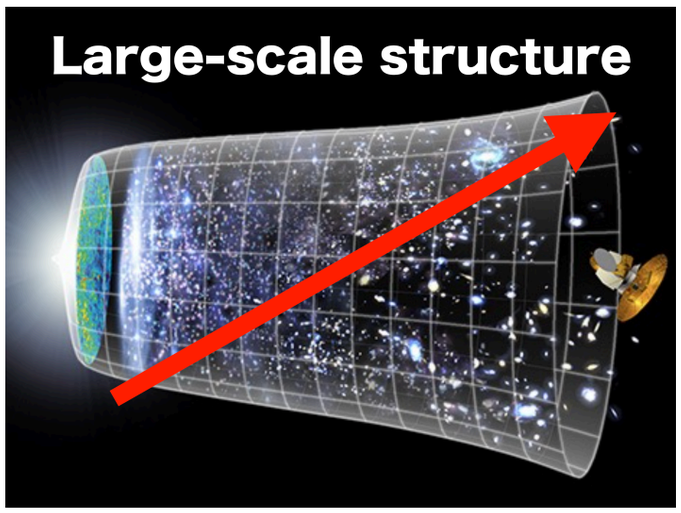
KAVLI IPMU INSTITUTE FOR THE PHYSICS AND MATHEMATICS OF THE UNIVERSE

国立天文台 NAOJ National Astronomical Observatory of Japan

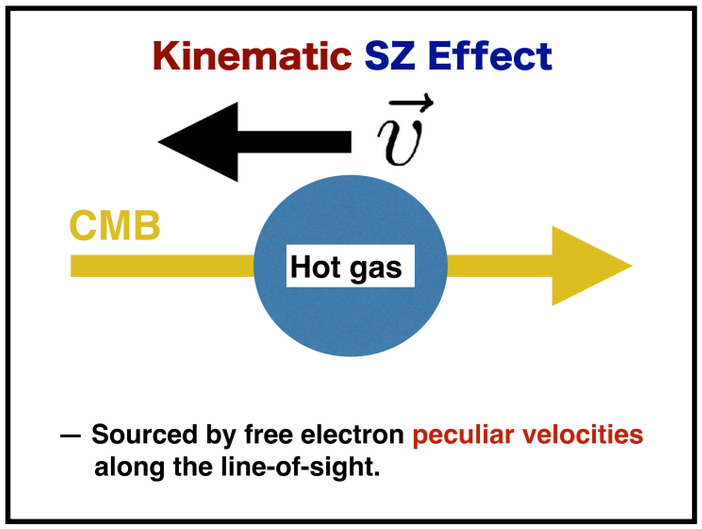
## Theoretical and observational cosmology

## Large-scale structure

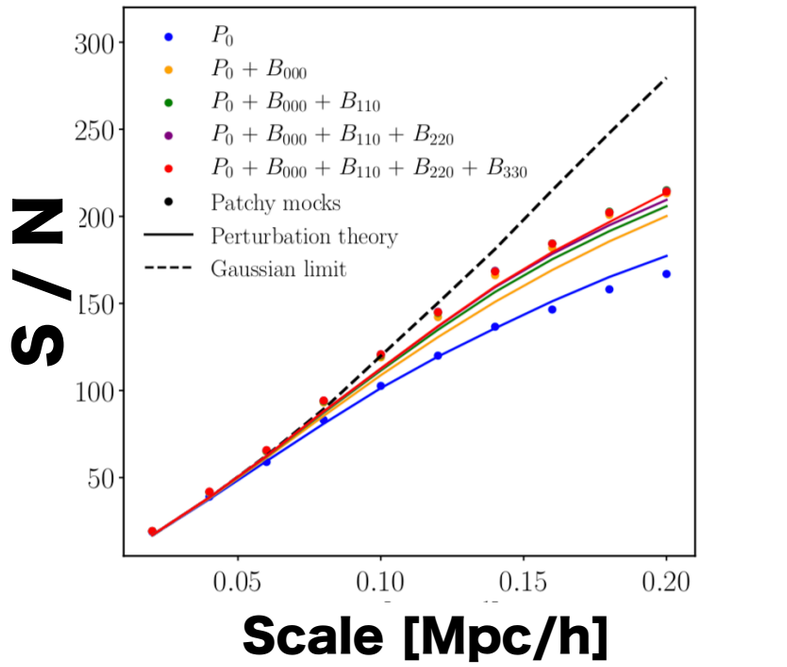
### Statistical anisotropy




### Kinematic SZ effect




### Redshift-space bispectrum



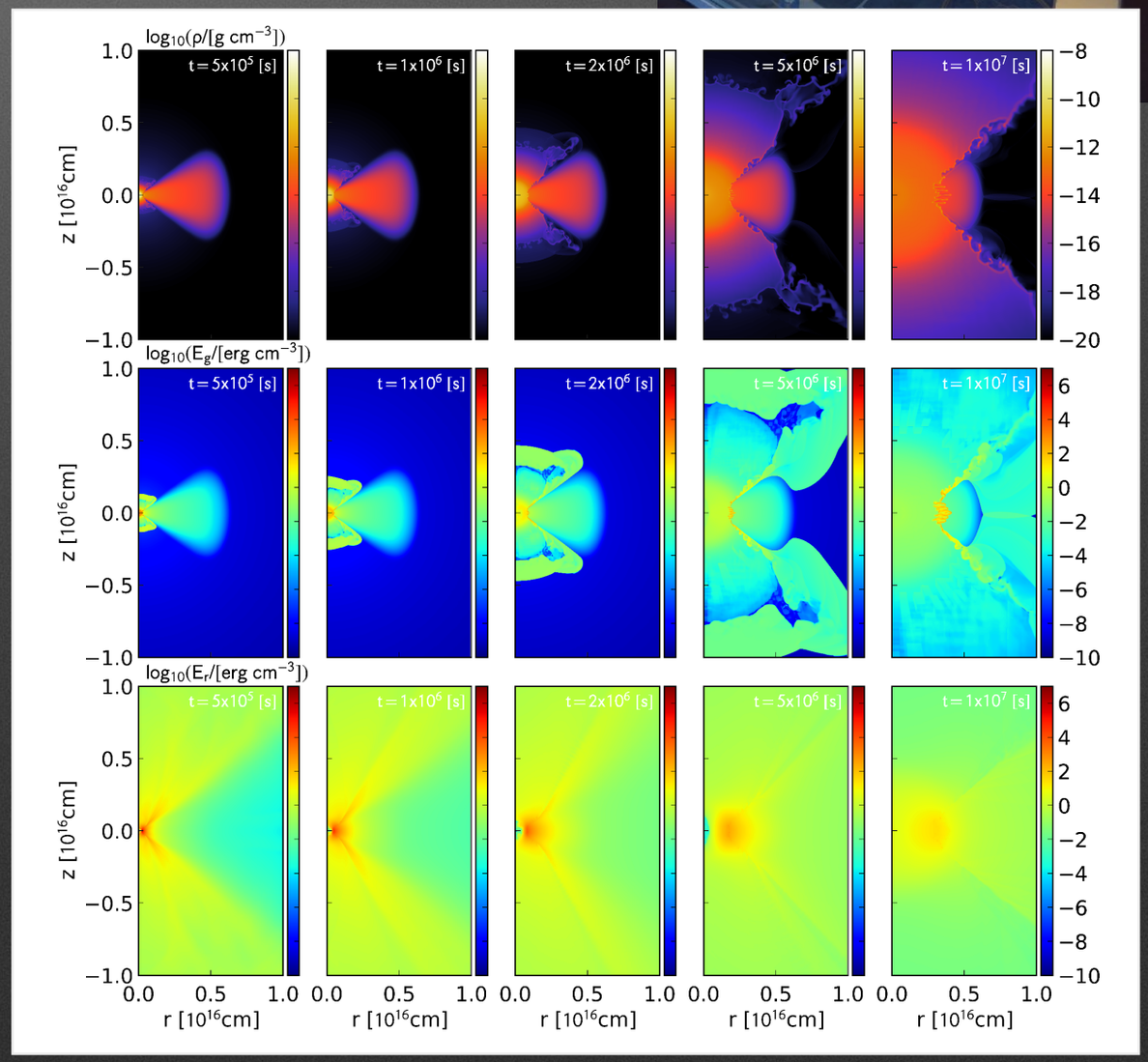
# Akihiro Suzuki (鈴木昭宏)


## Career

- 2007.4 - 2012.3 : Univ. of Tokyo (ph.D)
- 2012.4 - 2014.3 : NAOJ CfCA (postdoc)
- 2014.4 - 2017.3 : Kyoto U. Dept. of Astronomy (JSPS fellow)
- 2017.4 - 2018.3 : Kyoto U. YITP (post K postdoc)
- 2018.4 - : NAOJ DTA → DoS (NAOJ fellow)

## Research interests

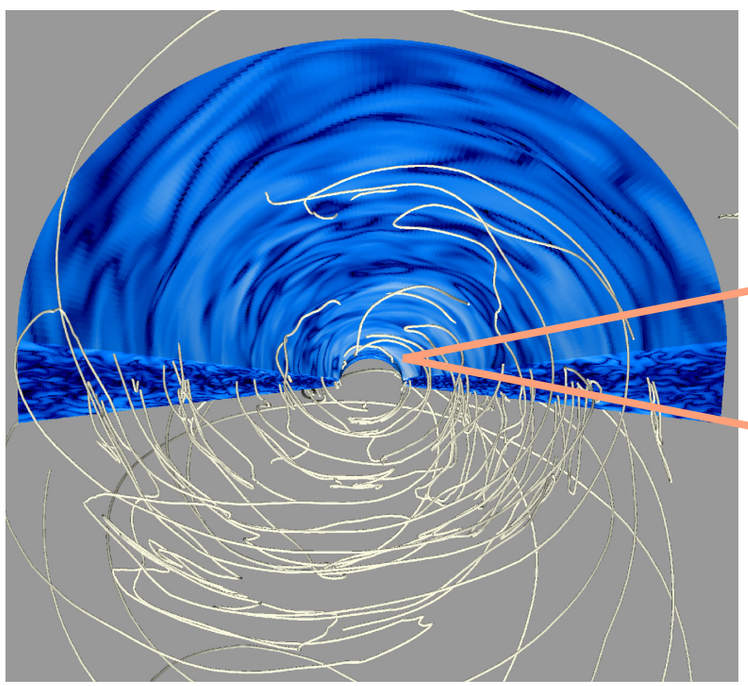
- Supernova explosions
- Gamma-ray bursts
- other high-energy phenomena

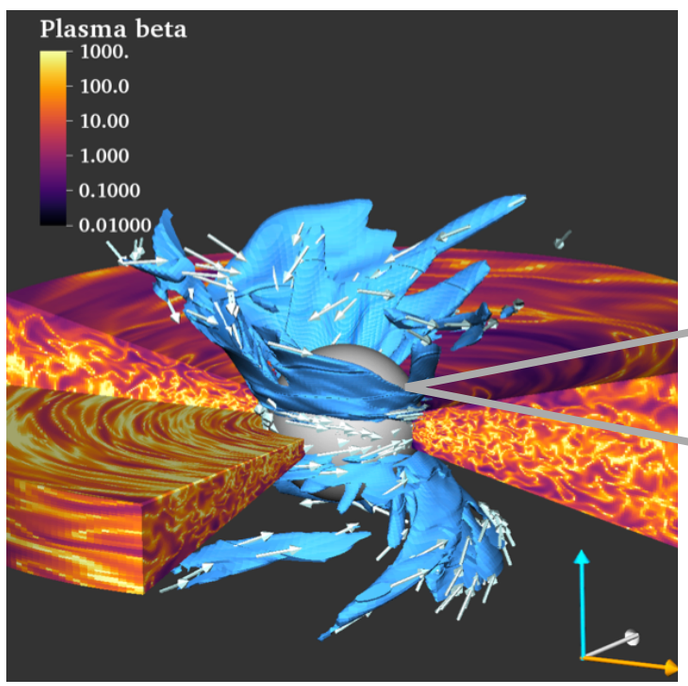



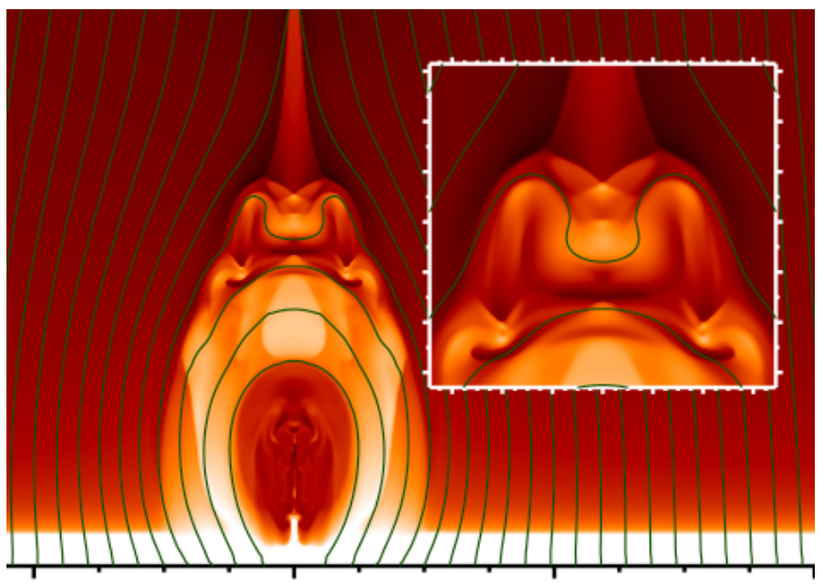
# Shinsuke Takasao 高棹 真介

- ~2016 : Ph.D. at Kyoto Univ. (supervisor: Kazunari Shibata)
- 2016-2019 : JSPS fellow at Nagoya Univ. (Ta-lab)
- 2019 : NAOJ fellow

Toward understanding the coevolution of a protostar and a disk:
Accretion disk physics — Star-disk interaction — Solar/Stellar physics





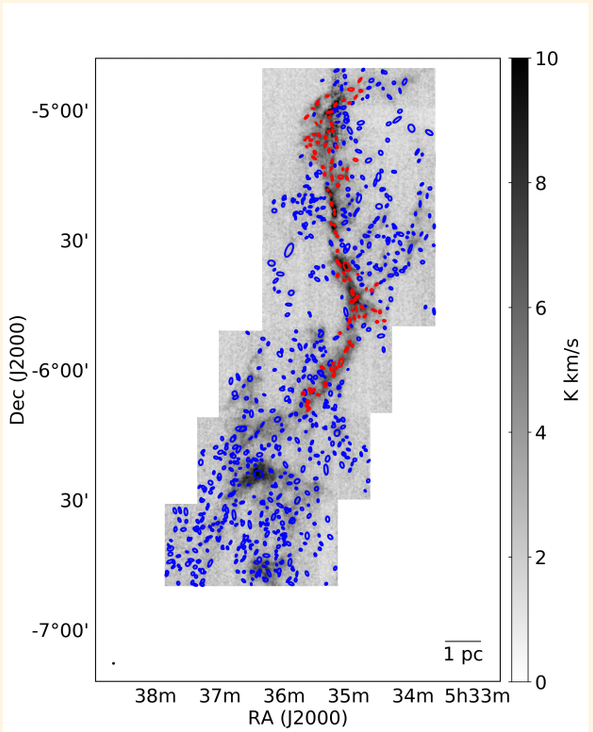
# Hideaki Takemura(竹村英晃)

School : SOKENDAI(M2)

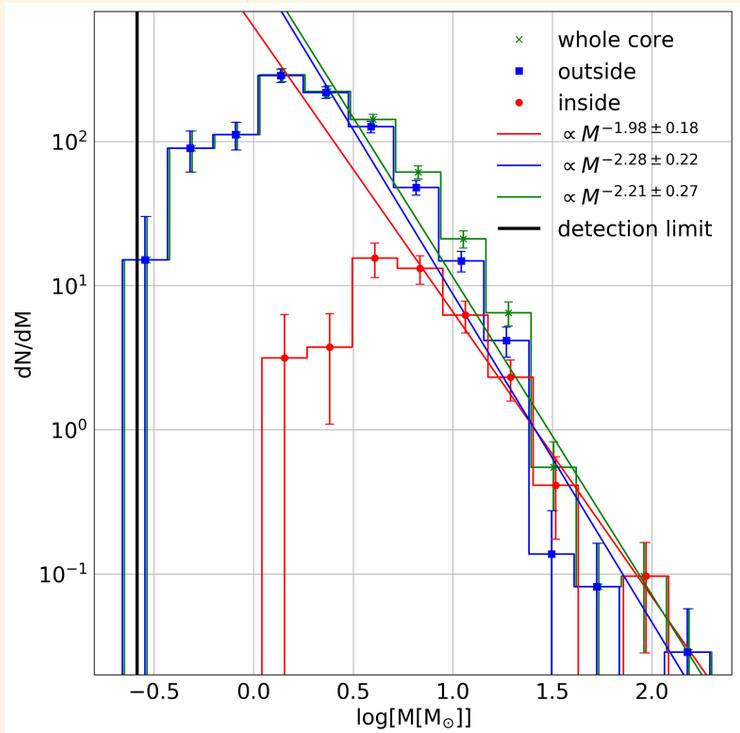
Superviser : Prof. Nakamura

Interests : Star formation(radio astronomy)

@Croatia, 2017




Core identification




Core mass function

New!

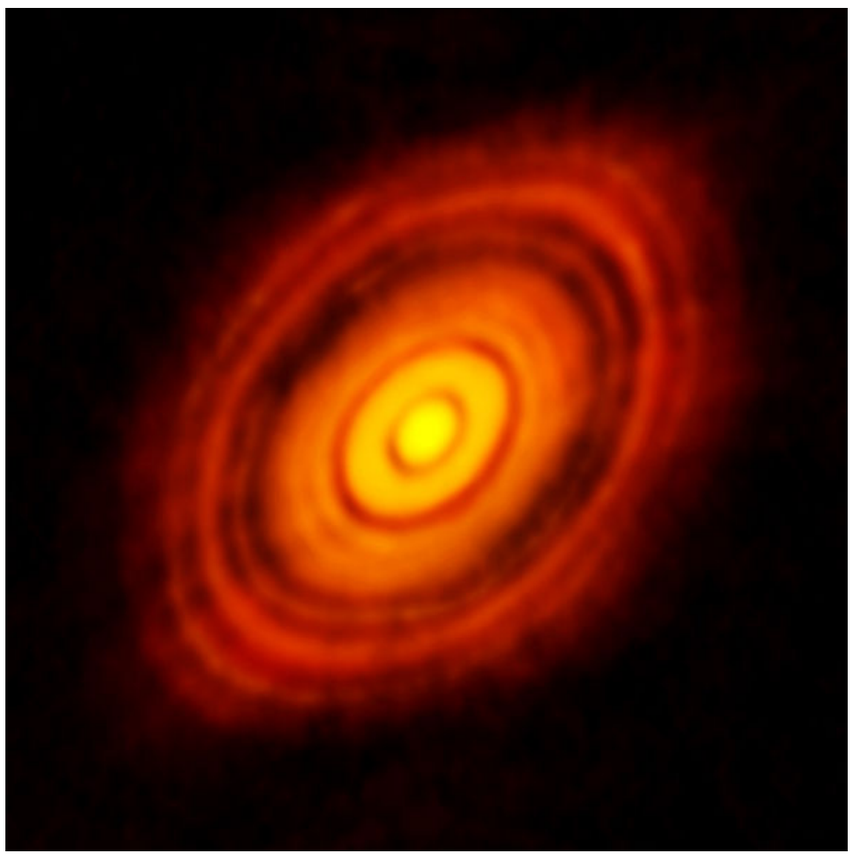
Hobby : Traveling, taking photos, reading books, cooking

This year's goal : taking exercise, going home early, traveling Japan, cooking tasty meal, keeping clean room&office

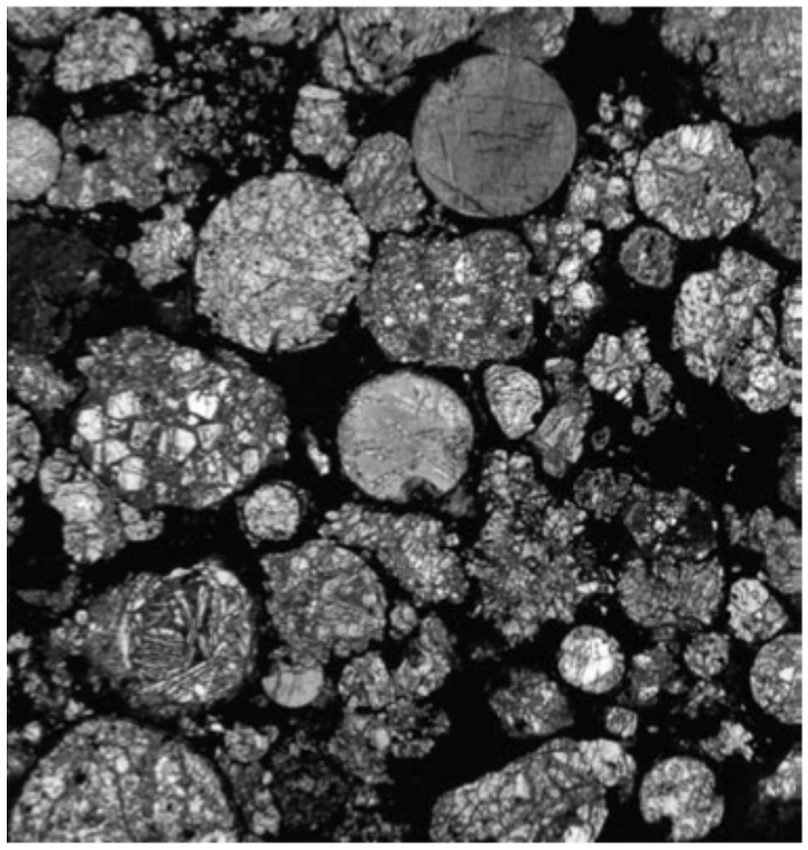
# **Tetsuo Taki** (CfCA Project Research Staff)

Keywords:

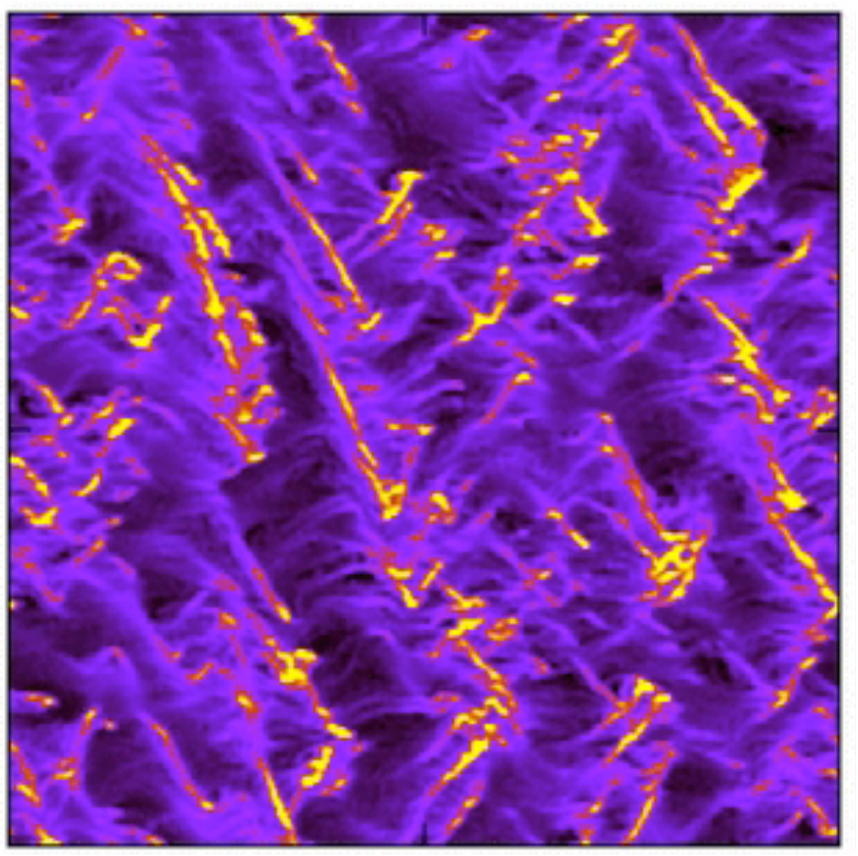
protoplanetary disk, planetesimal, chondrule, CFD



ALMA partnership, 2015



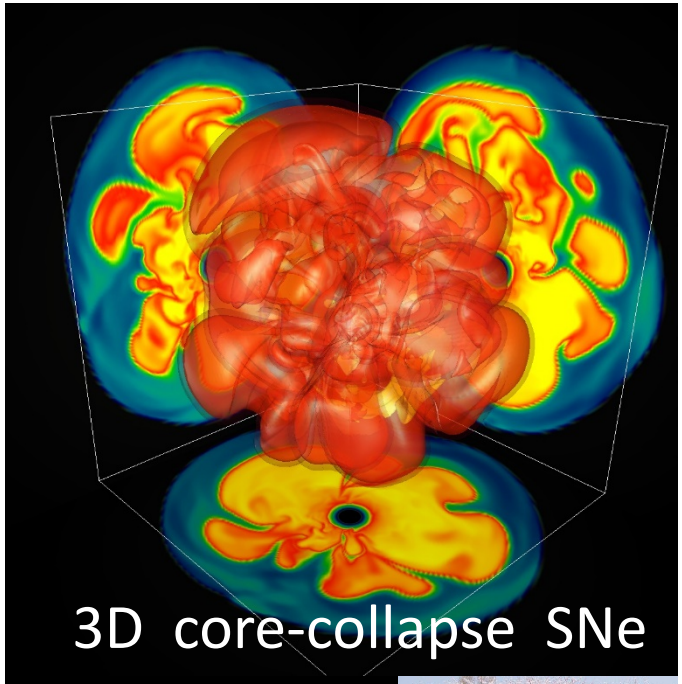
Apai & Lauretta, 2010



# Tomoya Takiwaki

Position: Assistant Professor (from DTA)

Research Field: Explosion mechanism of supernovae



3D core-collapse SNe

Hobby: Photo

Goals in this year

1. Continuing my life-work: using new EOS, ν-reaction, and ν-transport.
2. Beginning new projects: phenomenological modeling, Turbulent analysis, SNR, new modeling of GW.
3. Finding a good way for collaboration: planning, discussing, writing the paper.

# Misako Tatsuuma（辰馬 未沙子）

- D1, the University of Tokyo
  - 2018/04— Ph.D. student
  - 2018/10—2019/03 maternity and childcare leave
  - 2019/04— DC1
- Research topics: planetesimal formation, dust coagulation
- The latest research: “Tensile Strength of Porous Dust Aggregates” (Fig. 1)
- Favorites: my cute monster (5-month-old boy; Fig. 2), Yuzuru Hanyu (figure skater)
- Webpage: http://th.nao.ac.jp/MEMBER/tatsuuma/

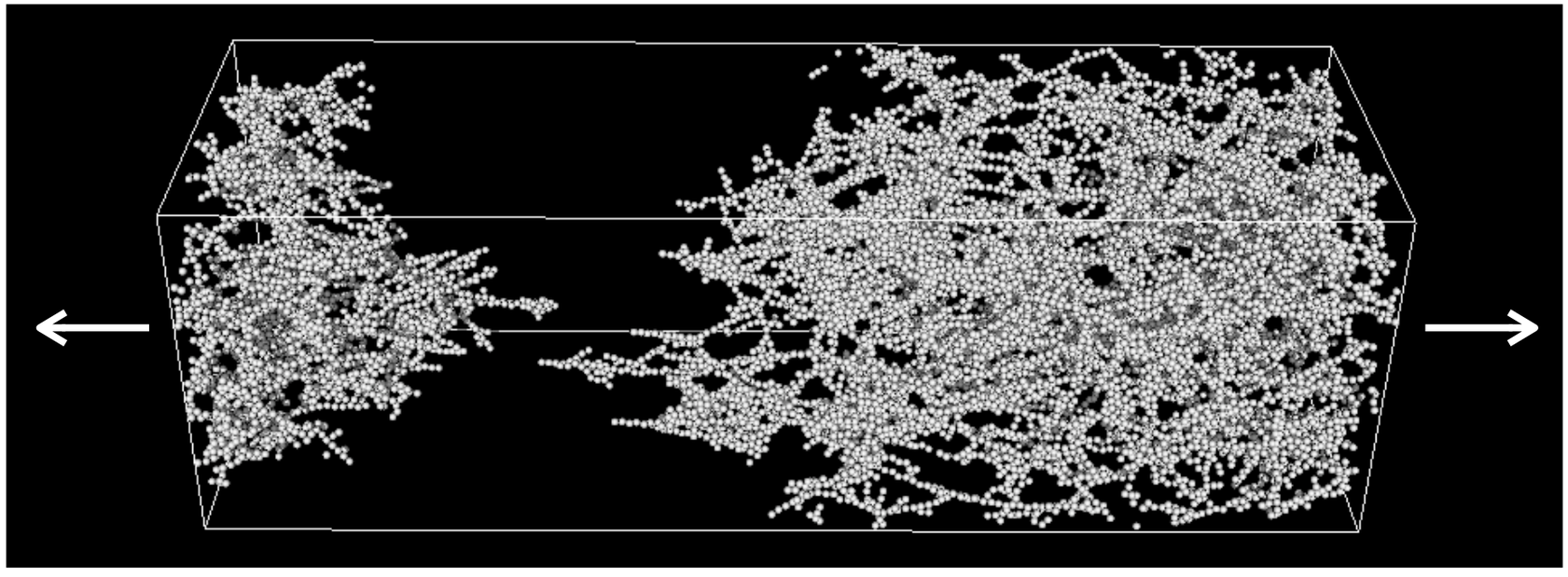


**Fig. 1.** A snapshot of a stretched aggregate

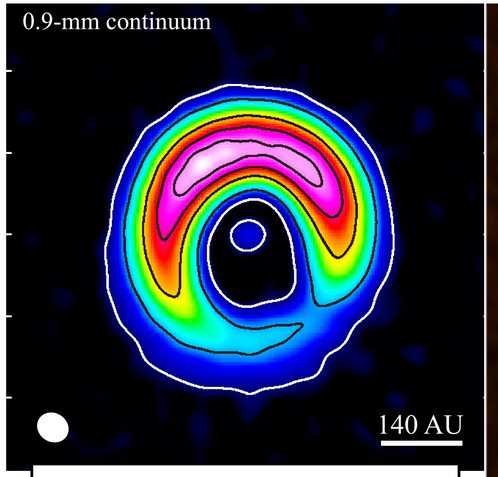
**Fig. 2.** A picture of me and my son

# Tomisaka Kohji

- Chair of Division of Science, NAOJ
- Carrier
  - Kyoto(Undergraduate)→Hokkaido（Graduate Student）→TAO（PD）→Niigata U.→NAOJ
- Research History
  - Supernova remnants, Superbubble, Starburst Galaxies（@Hokkaido）→PhD of Dr. Hanayama
  - Coagulation of Molecular Clouds（PhD Thesis）
  - Magnetohydrostatics of Magnetized Clouds（PD～Niigata）
  - Gravitational Contraction of Magnetized Clouds（Niigata～）→PhDs of Drs. Machida and Tomida
  - nonLTE Radiation Transfer, Goldreich-Kylafis Effect, Polarization of Thermal Dust Emissions（NAOJ～）with Dr. Kataoka

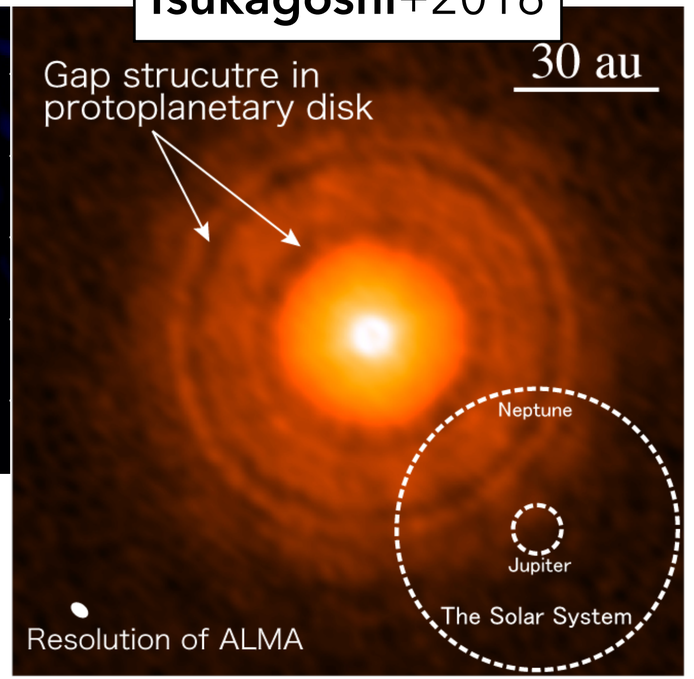
# Takashi Tsukagoshi, from Division of Radio Astronomy

- **Interests**
  - Star and planet formation
  - Millimeter/submillimeter observations
  - System development of radio telescope
  - Processing and visualization of big data



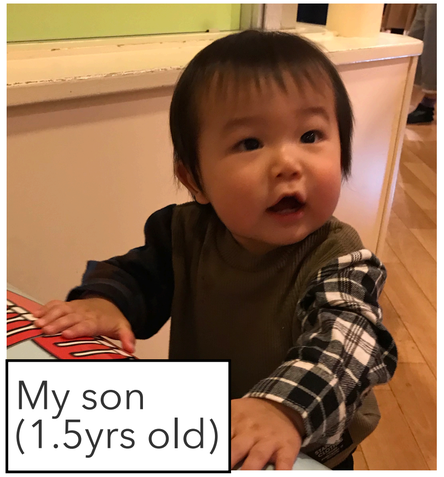

Fukagawa, **Tsukagoshi**+2013

**Tsukagoshi**+2016




- **History**
  - 2008; Got Ph.D at SOKENDAI
  - ~2012; IoA, U.Tokyo
    - System administrator of ASTE
  - ~2018; Ibaraki Univ.
    - Observations with ALMA and Subaru
  - ~2019; NAOJ
    - System development & CSV of DESHIMA

- **Favorites**
  - Rugby football
  - Camping
  - Fishing
  - Gaming



My son (1.5yrs old)

# Takahiro UEDA

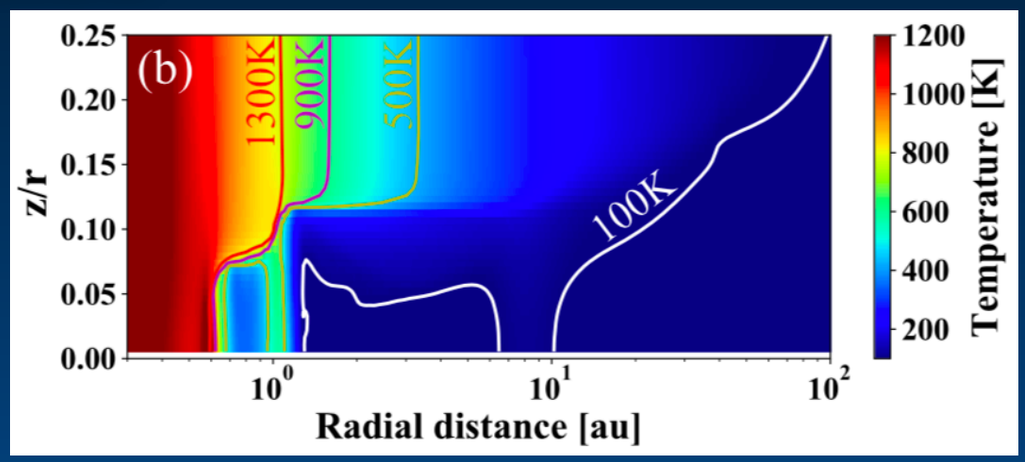
## JSPS Postdoc Fellow (host: Akimasa Kataoka)

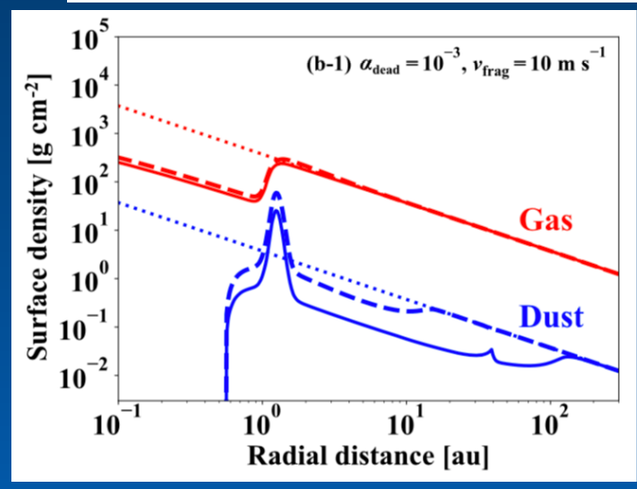
## Education & Research Experience

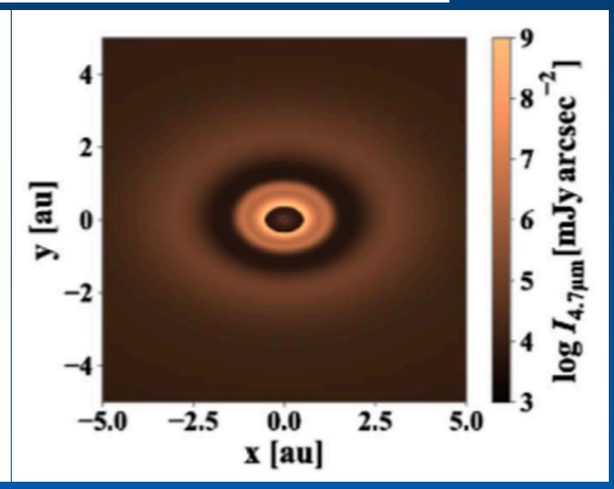
Apr. 2014 - Mar. 2016 Master of Science, Tokyo Tech
Apr. 2016 - Mar. 2019 Doctor of Science, Tokyo Tech
**Apr. 2019 - Present JSPS Postdoc Fellow**

## Research Interests

- **Formation of planets**
  - Dust evolution in protoplanetary disks
  - Radiative transfer simulations
- **Dynamics of debris disks**




## Favorites

Bouldering, Watching baseball (Yokohama DeNA Baystars), Cats

more info: https://www.takahiroueda.net

# Yuta UEDA
# (academic assistant)

- master : A. Kataoka-san, T. Kawashima-san
- day of duty : every Wednesday, Thursday
- time of duty : full-time
- work room : Central Building 3rd floor, room 309
- work contents : miscellaneous duty

It's nice to meet you all.

# Self-introduction

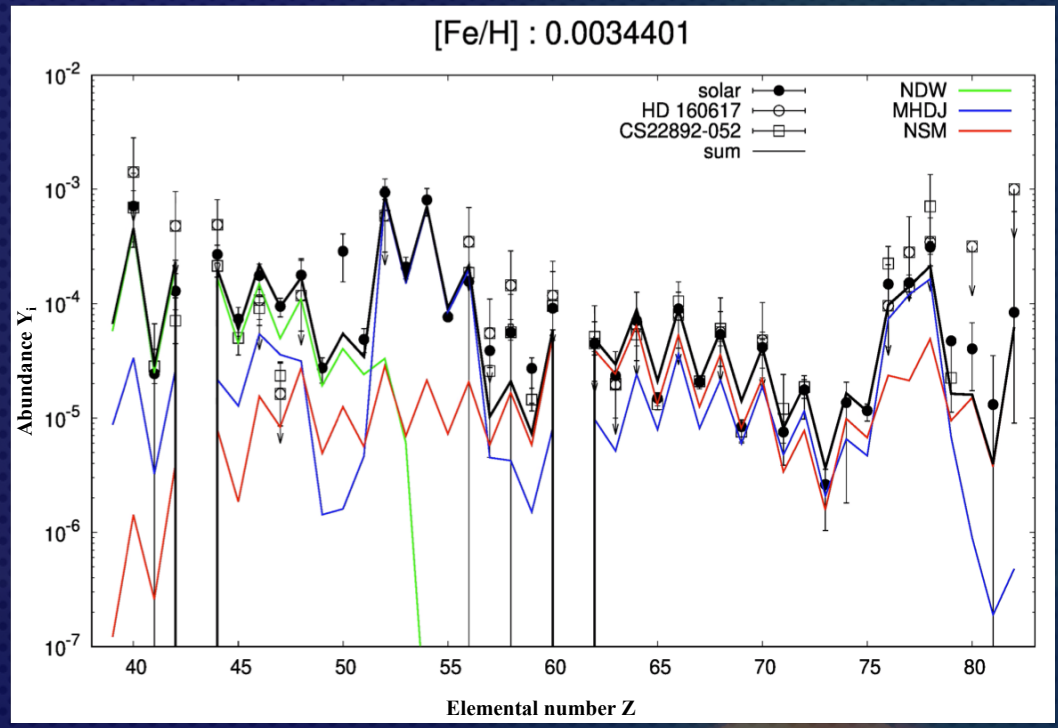
Name : Masayuki Yamaguchi (山口正行)
but you can call me “Gussan”.

- University of Tokyo: 2nd-year PhD student
- Superviser : Ryohei Kawabe
- Research Interests:

Radio Interferometric Imaging
Observation of Planet-Forming Disks with ALMA

# Yuta Yamazaki

## M2 Univ. of Tokyo, Prof. Kajino's group




**Research interest**

**… r-process, cosmic evolution**

(of something)

Academic interest

… prime number

… 'why do we live in 3 dimensions?'

**Hobby** :

programing (bot, automation, ML, hack)

art appreciation (…not an export)

# YOSHIDA, Haruo（吉田 春夫）

- **Personal information**
- Born in 195■ in Nagoya, Japan
- PhD from University of Tokyo in 1983
- NAOJ member (1988 –> present)
- Hobby: time tables for railway, airline, etc.

- **Research interest**

  **Mathematical aspects of Celestial Mechanics**
- >> Criteria for integrability
- Integrable or not, that is the question.
- >> Numerical integration scheme
- Key word: Symplectic integrator

- **Current interest**

**My last year in NAOJ**

→ Shutdown procedure (終活)

Fig1. 30年くらい前の私

Fig2. 最近の私 almost invisible

# Yuki Yoshida

- Division of Science, Master 1
- Belong to Kokubo Laboratry
- I’m interesting in planetary formation,
  and will study the process of formation by using programing

I’d like to talk about other studies!

Thank you for listening!