RIKEN (1917-)

- **First and Largest national research Institute in Japan**
  Number of researchers (～2800, ～17% non-Japanese), Total budget (～740M USD)
- **All fields in natural sciences**
  Physics, Chemistry, Life, Mathematics, Engineering, Information, Computation, …
- **Big facilities**
  Light source (SPring-8), Supercomputer (FUGAKU), Heavy-Ion Accelerator (RIBF)

A: Sendai Campus
B: Tsukuba Branch
C: Wako Branch (Headquarters)
D: Tokyo Campus
E: Yokohama Branch
F: Nagoya Branch
G: Keihanna Campus
H: Osaka Campus
I: Kobe Branch
J: Harima Branch

Spring-8/SACLA

FUGAKU

RIBF

A: RIKEN Facility Office at RAL (UK)
B: Europe Office (Belgium)
C: Singapore Office (Singapore)
D: Beijing Office (China)
E: RIKEN BNL Research Center (USA)

RHIC

RIKEN-Berkeley Center

RAL

http://www.riken.jp/en/about/

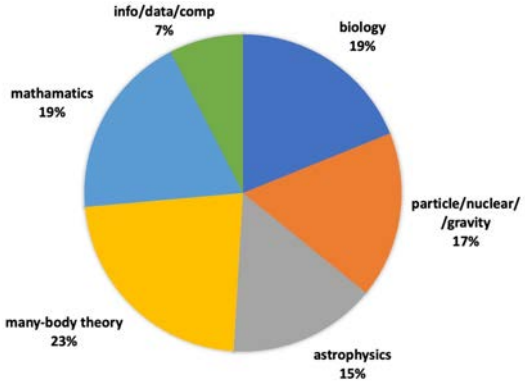
RIKEN

iTHEMS RIKEN Center for Interdisciplinary Theoretical and Mathematical Sciences

https://ithems.riken.jp/en

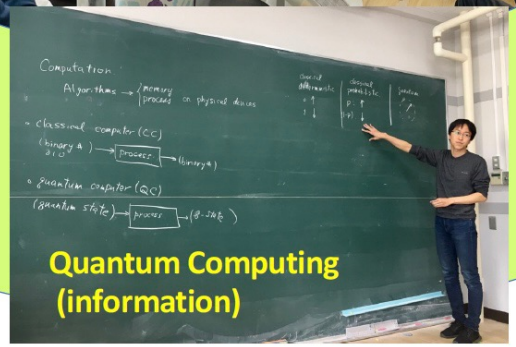
Mathematician, Physicist, Biologist, Computational & Information Scientists under one roof (currently about 120 researchers)

Director			Deputy Director			Coordinator
						
S. Iso (Phys.)	T. Tada (Phys.)	C. Beauchemin (Biology)	S. Nagataki (Astro.)	Y. Kawahigashi (Math)	Y. Hidaka (Phys.)	T. Nagai



Under One-Roof Activities 1: Coffee Meetings

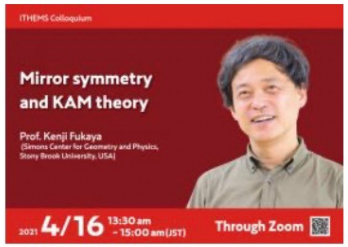
Coffee Meeting on Every Friday 12:30- and 15 min. talks



New collaborations among different fields

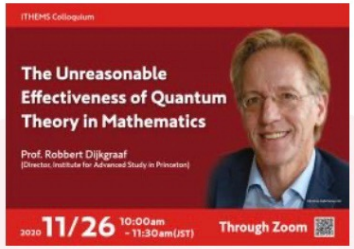
Under One-Roof Activities 2: Colloquiums

iTHEMS RIKEN Center for Interdisciplinary Theoretical and Mathematical Sciences



Geometry

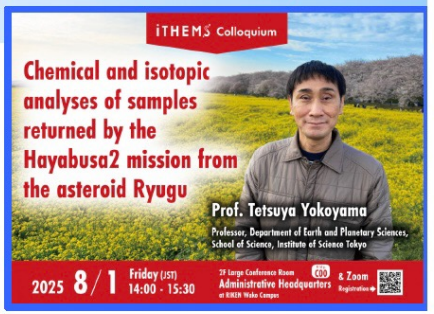
Cell dynamics



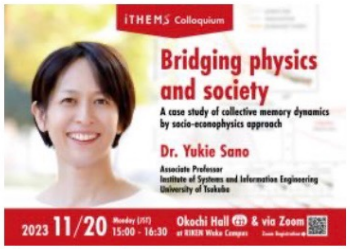
Math from Phys.

Single-celled organism

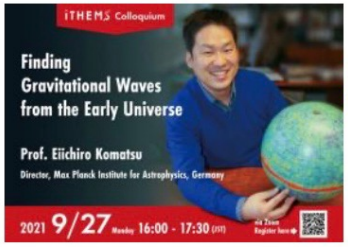
Astro chemisty



Population dynamics



Physics and Society



Gravitational waves

iTHEMS colloquiums

https://ithems.riken.jp/en/ac/colloquiums

Infectious diseases

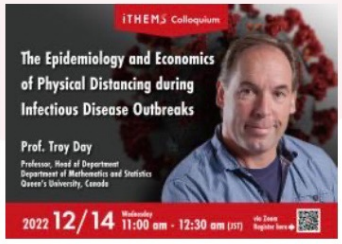
Quantum gravity

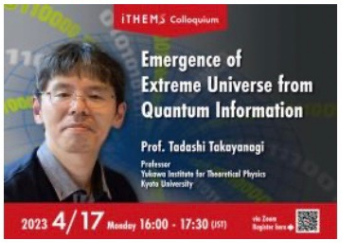
Turbulence

Epidemiology

Optimal transport

Quantum information





Under One-Roof Activities 3: Study/Working Groups

Study Groups

The study groups are formed to promote information sharing among researchers. Activities of a study group are financially supported by iTHEMS, upon the review of the proposal to form the study group.

Download the proposal form (Word 172KB)

iTHEMS-phys Study Group

The main purpose of the "iTHEMS-phys" study group is to keep a regular seminar series and sometimes have an intensive lecture or workshop on any topics...

iTHEMS Biology Seminar Study Group

We are holding regular seminars and other activities on topics related to biology. Our aim is to lower the boundaries between biology and...

Quantum Gravity Gatherings

Quantum Gravity Gatherings will offer an intensive lecture series on various approaches to quantum gravity as an opportunity for people of different...

Quantum Computation Study Group

The goal of this study group is to learn and discuss quantum computation and its related fields from various perspectives, facilitated by fostering...

Interdisciplinary Math Study Group

The aim of this study group is to cultivate opportunities for delving into mathematics, encompassing both fundamental principles and the...

Computationally-driven Solutions for Healthier Lives (ComSHeL)

Our purpose is to leverage computational and analytical methods to enhance our understanding of health, diseases, treatments, and medical...

iTHEMS Cosmology Forum

Providing a forum to discuss cosmology emerging

iTHEMS-ABBL Joint Astro Study Group

The purpose of this SG is to foster collaboration

Working Groups

The working groups are formed to explore novel possibilities of the interdisciplinary collaborations. Activities of a working group are financially supported by iTHEMS for one to two years, upon the review of the proposal to form the working group.

Download the proposal form (Word 172 KB)

iTHEMS math-phys Working Group

iTHEMS Mathematical Physics Working Group (November 1st 2021-).

DEEP-IN Working Group

"DEEP learning for INverse problems (DEEP-IN) in Sciences" working group (April 1st, 2024 -)

Information Theory Working Group

Our goal is to provide a clearer overview of wider theoretical disciplines on the basis of information theory, by making close connections across fields:...

Asymptotics in Astrophysics Working Group

The aim of this study group is to bring together physicists and mathematicians to share techniques and tricks from the textbook "Advanced...

UCB MPS- RIKEN iTHEMS MOU (2023-2026)

Extension of MEMORANDUM OF UNDERSTANDING BETWEEN

Mathematical and Physical Sciences Division, University of California, Berkeley,

AND

Interdisciplinary Theoretical and Mathematical Sciences Program, RIKEN, Japan

CONCERNING

Collaboration, Cooperation, and Exchanges in the Fields of Theoretical Physics, Nuclear Astrophysics, Mathematics, and Quantum Information

1. **Objective**

The Participants intend to explore future collaborations in the fields of theoretical physics, nuclear astrophysics, and related computational sciences.

2. **Proposed Areas of Collaboration**

The Participants intend to collaborate in the following areas

a) lattice QCD and other computational many-body theory;
b) tests of fundamental symmetries using nuclei and atoms;
c) nuclear and neutrino astrophysics;
d) pure and applied mathematics; and
e) quantum information science.

The scope of activities and cooperation may be changed or extended upon mutual written consent of the Participants.

3. **Proposed Forms of Collaboration**

The Participants expect to collaborate through:

a) Mutual visits including the exchange of research staff, graduate students and post-doctoral fellows;
b) Joint workshops, seminars and other similar activities; and
c) Exchange of scientific materials, publications, and information.

Any future collaborative research must only be undertaken pursuant to an appropriate written agreement therefore.

Signed for UCB MPS

KAHN Steven
Dean
Mathematical and Physical Sciences Division

Date: Sept. 21, 2023
Place: BERKELEY, CA

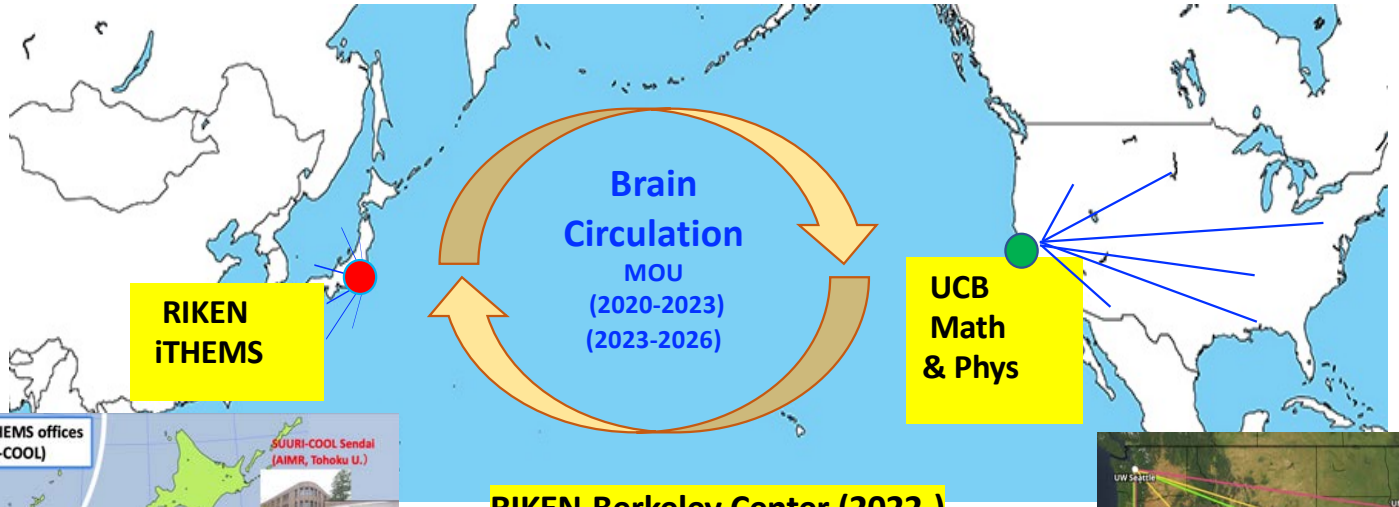
Signed for RIKEN iTHEMS

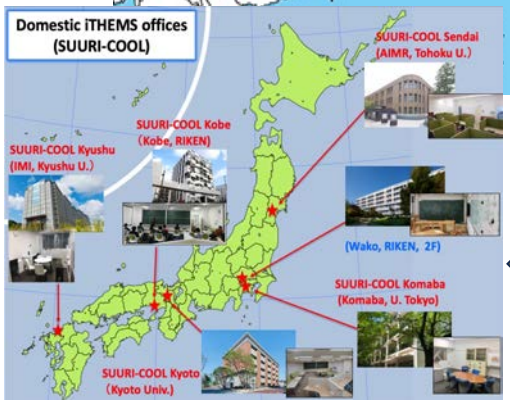
HATSUDA Tetsuo
Program Director
iTHEMS, RIKEN

Date: Aug. 23, 2023
Place: Wako, Saitama, JAPAN

Contact persons
UCB: Wick Haxton
RIKEN: Tetsuo Hatsuda

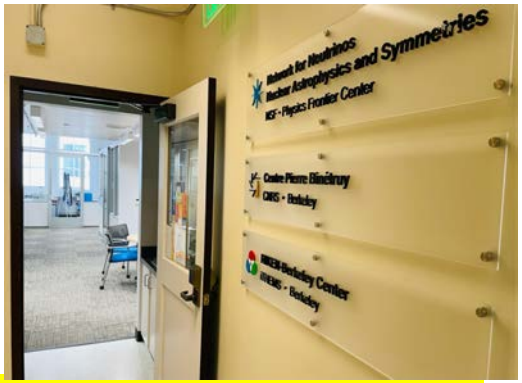
Brain circulation across the Pacific





6 satellite offices in Japan

RIKEN-Berkeley Center (2022-)



ASPIRE RIKEN-Berkeley Program
(2024-2029)

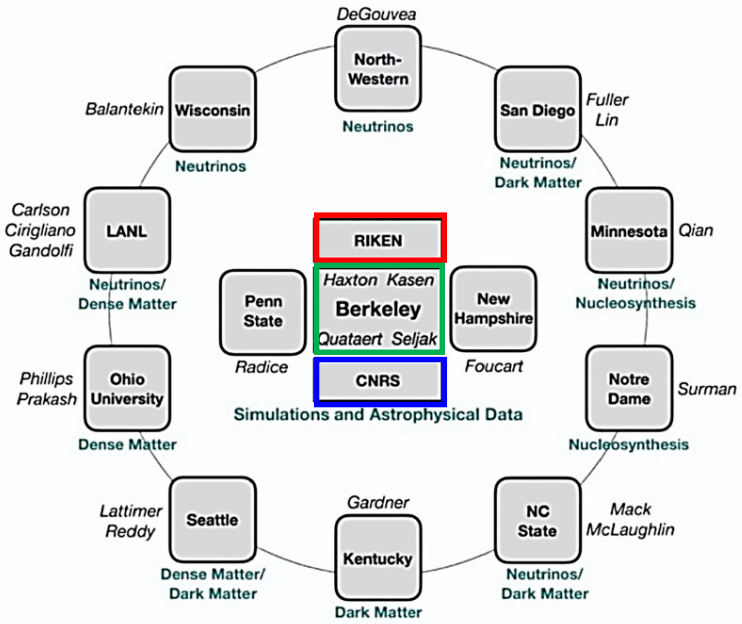
ASPIRE
Adopting Sustainable Partnerships for Innovative Research Ecosystem

13 institutions in US

RIKEN-Berkeley Center with N3AS

N3AS Network for Neutrinos, Nuclear Astrophysics, and Symmetries
PHYSICS FRONTIER CENTER

https://n3as.berkeley.edu/



N3AS Domestic Partners

N3AS International Partners

- CNRS APC/ Centre Pierre Binétruy
- RIKEN-Berkeley Center

Radek Stompor (CNRS)

Hiro Nagataki (RIKEN)

JST ASPIRE Program (2024-2029)

- RIKEN-Berkeley Mathematical Quantum Science Initiative -

PI: Tetsuo Hatsuda

RIKEN

Center for Interdisciplinary Theoretical and Mathematical Sciences (iTHEMS)
Quantum Mathematical Science Team
Team Director

Co-PI: Wick Haxton

UC Berkeley

NSF Physics Frontier Center (N3AS)
Director

ASPIRE
Adopting Sustainable Partnerships for Innovative Research Ecosystem

iTHEMS RIKEN Center for Interdisciplinary Theoretical and Mathematical Sciences

https://ithems.riken.jp/en

N3AS Network for Neutrinos, Nuclear Astrophysics, and Symmetries
PHYSICS FRONTIER CENTER

https://n3as.berkeley.edu/

RIKEN-Berkeley Mathematical Quantum Science Initiative

Thema leaders

Doi	RBV	RBF	Quantum Matter
Hatsuda	RBV	RBF	Quantum Computation
Nagataki	RBV	RBF	Quantum Universe
Kawahigashi	RBV	RBF	Quantum Mathematics

RBV =RIKEN Berkeley Visitor (1-3 months)
RBF =RIKEN-Berkeley Fellow (1-3 years)

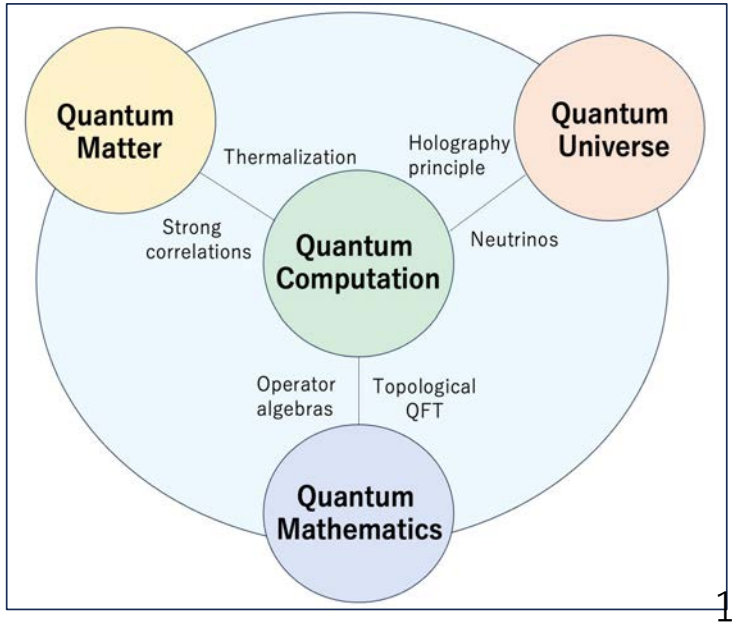
Haxton Lab. N3AS, UCB Phys.) | Zaletel Lab. (UCB Phys.) | Briceño Lab. (UCB Phys.) | Walker -Loud group (LBNL NSD) | Rrapaj group (LBNL NERSC) | Kasen Lab. (UCB Phys.) | Nomura Lab. (UCB BCTP) | Voiculescu Lab. (UCB Math.)

Doi Hatsuda Nagataki Kawahigashi

PI: T. Hatsuda

Co-PI: W. Haxton

S. Aoki
Coordinator



International Brain Circulation – current status -

1. RIKEN-Berkeley Fellow = long-term stay (1-3 years in Berkeley)

- Employed by RIKEN iTHEMS through international recruitment.
- Salaries are shared as RIKEN : Berkeley = 2 : 1.

Past fellows:

Jason Chang	(2018/05/01-2021/11/14) →	LinkedIn
Yantau Wu	(2021/06/01- 2024/08/31) →	IoP, CAS, China
Ermal Rrapaj	(2022/11/01-2023/04/30) →	NERSC, JBNL
Maria Saez	(2022/11/01-2024/05/31) →	NSTRC, Argentina
Yuki Fujimoto	(2024/10/01-2025/06/30) →	Niigata Univ., Japan


Jason


Yantao


Ermal

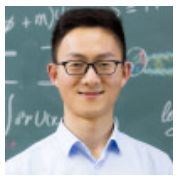

Maria


Yuki

Current fellows:

Jan Schuette-Engel	(2023/07/01-)
Yan Lyu	(2024/03/01-)
Yuuka Kanakubo	(2024/10/01-)
Gabriele Di Ubaldo	(2024/10/01-)


Jan


Yan


Yuuka


Gabriele

2. ASPIRE visiting Program: from RIKEN to Berkeley

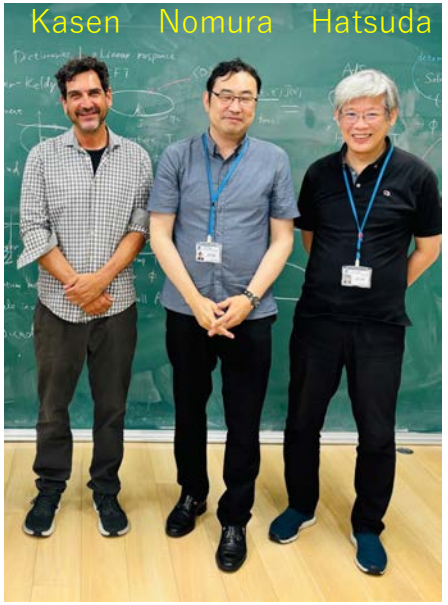
--- Sending Junior Japanese postdocs and students (a few weeks – a month)

- 2023: 2 postdocs
- 2024: 4 postdocs, 2 students, 2 seniors
- 2025 (as of Aug.5): 6 postdocs, 2 students, 5 seniors

3. ASPIRE Invitation Program: from Berkeley to iTHEMS

Seniors (*co-PI) :

- Gordon Baym (UIUC) 2024/2/10-3/21, 2025/3/2-31
- Daniel Kasen (UCB)* 2025/1/1-6/30
- Baha Balantekin (WU, Madison) 2024/6/16-6/21, 2025 July
- Ermal Rrapaj (LBNL)* 2024/6/16-6/21, 2025/1/27-31
- Yasunori Nomura(UCB)* 2024/6/24-8/20, 2025/6/25-8/15
- Wick Haxton (UCB)* 2025 October
- Dan-Virgil Voiculescu (UCB)* 2025 December



Juniors:

- FY2024: 4 postdocs from the US team (short term)
- FY2025 (as of July 31): 3 postdocs from the US team (short term)

4. ASPIRE RIKEN-Berkeley Workshop

- **Mutual participation in the annual meetings of iTHEMS and N3AS**

2024:
N3AS Annual Meeting (2024/6/1-2) at UC Berkeley
8 members from iTHEMS participated

2025:
iTHEMS Annual Meeting (2025/7/24-25)
at RIKEN Wako Campus
4 members from N3AS participated

2025:
N3AS Annual Meeting (2025/8/4-5) at UC Berkeley
10 members from iTHEMS are participating

・Joint workshops supported by ASPIRE

Joint N3AS-iTHEMS Meeting on Quantum Information Science in Multimessenger Astrophysics
(2024/6/16-18) at RIKEN Wako

https://ithems.riken.jp/ja/events/joint-n3as-ithems-meeting-on-quantum-information-science-in-multimessenger-astrophysics

Theories of Astrophysical Big Bangs 2025
(2025/2/17-19) at RIKEN Wako

https://ithems.riken.jp/en/news/theories-of-astrophysical-big-bangs-2025-on-february-17-2025

RIKEN - LBNL Workshop on Quantum Information Science
(2024/9/3-6) at LBNL
https://ithems.riken.jp/en/news/riken-lbnl-workshop-on-quantum-information-science-on-september-3-6-2024

From Quarks to Neutron Stars: Insights from kHz gravitational waves

(2025/4/23-24) at U. Tokyo Hongo Campus

Co-hosted with ASPIRE program: “Japanese-Australian Gravitational Wave Collaboration”
https://ithems.riken.jp/en/news/from-quarks-to-neutron-stars-insights-from-khz-gravitational-waves-on-april-23-2025

N3AS Summer School

Multi-Messenger Astrophysics

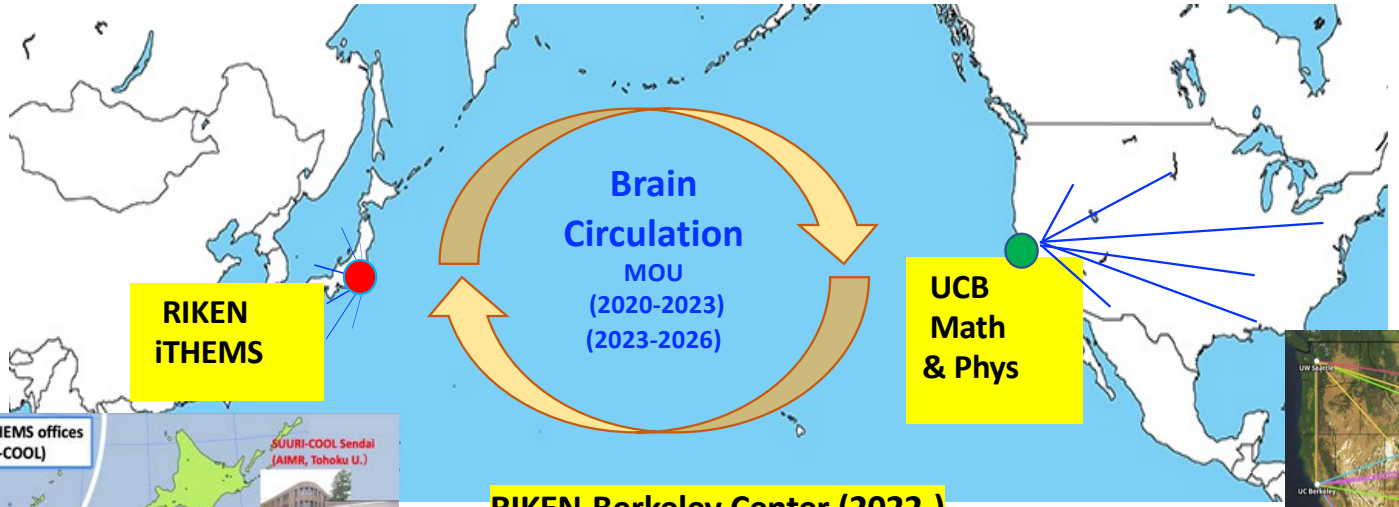
2025 Summer School in Santa Cruz: July 11-20, 2025

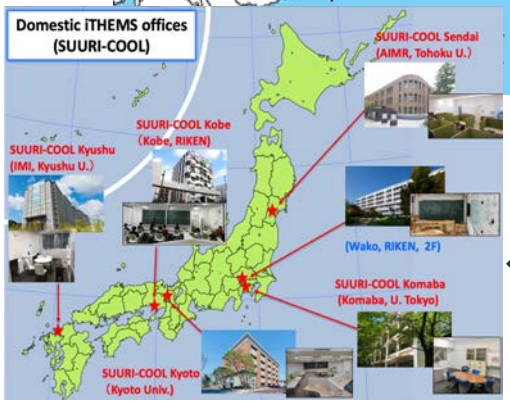
3 students/postdoc
from Japan supported by ASPIRE

Organized by Phys. Dep. UCB and LBNL
(sponsored by ASPIRE Program)

2 senior researchers
4 postdocs from Japan supported by ASPIRE

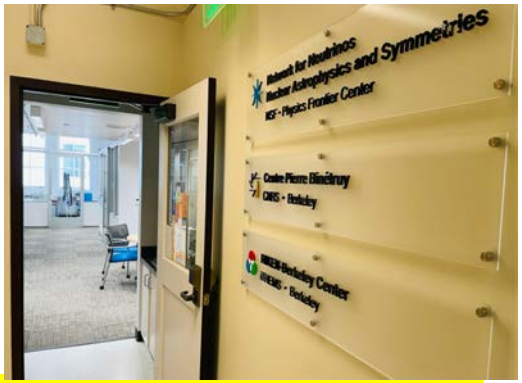
Brain circulation across the Pacific





6 satellite offices in Japan

RIKEN-Berkeley Center (2022-)



ASPIRE RIKEN-Berkeley Program
(2024-2029)

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N3AS Network for Neutrinos, Nuclear Astrophysics, and Symmetries
PHYSICS FRONTIER CENTER
NSF

Leinweber Institute for Theoretical Physics

Berkeley Quantum Nexus