

Smart and Human

常翔学園

摂南大学



# Graduate school and career path in fundamental science

Takehiro Azuma (Institute for Fundamental Sciences)  
Employment Design I

URL: <http://www.setsunan.ac.jp/~t-azuma/index.html>

# 1. Introduction

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SETSU DAI

## Curriculum Vitae (quoted from [researchmap](#))

### Academic & Professional Experience

I teach basic math,  
such as calculus and linear algebra.

Plain Text

Apr 2015	- Today	Associate Professor, Institute for Fundamental Sciences, Setsunan University
Apr 2010	- Mar 2015	Permanent Lecturer, Institute for Fundamental Sciences, Setsunan University
Apr 2008	- Mar 2010	Permanent Lecturer, Department of Mathematics and Physics, Setsunan University
Oct 2008	- Mar 2008	Visiting Fellowship, VisiTata Institute of Fundamental Research (TIFR, India)
Apr 2004	- Sep 2008	JSPS postdoctoral fellowship, High Energy Accelerator Research Organization (KEK, Tsukuba)
Apr 2002	- Mar 2004	JSPS predoctoral fellowship (DC2), Kyoto University

I was a postdoc (a researcher with a temporary appointment)  
at [KEK](#), [TIFR](#) from 2004 to 2008.

Plain Text

### Education

Apr 2001	- Mar 2004	Department of Physics, Predoctoral course, Faculty of Science, Kyoto University
Apr 1999	- Mar 2001	Department of Physics, Master course, Faculty of Science, Kyoto University
Apr 1995	- Mar 1999	Faculty of Science, Kyoto University
Apr 1992	- Mar 1995	Todaiji Gakuen Highschool

I have been studying Particle Physics  
since I entered graduate school.

### Others

Plain Text

Jan 1994

Winner of the First Round in "Japanese Olympiad in Informatics"

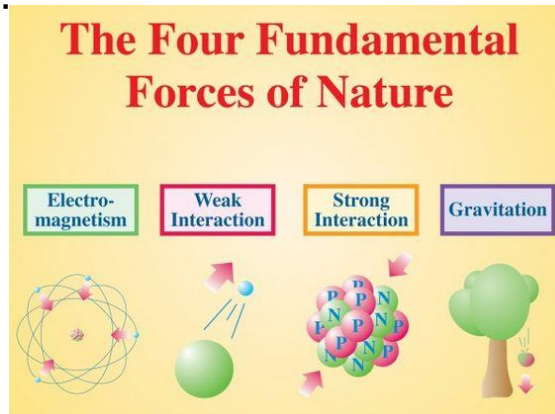
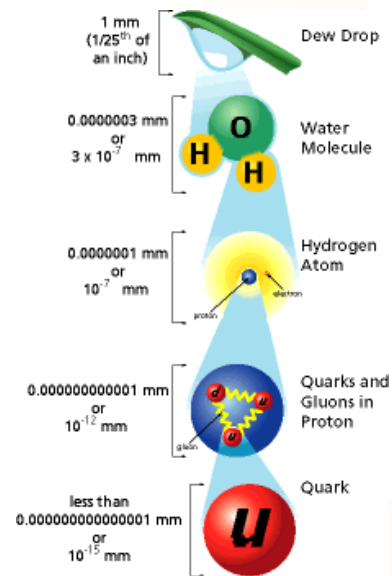
# 1. Introduction

**Particle Physics:** the branch of physics that studies the nature of the particles that constitute matter and radiation.

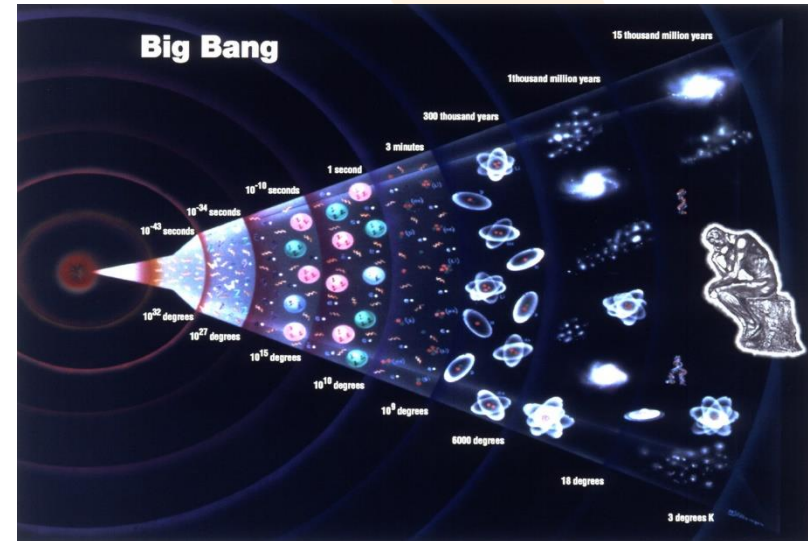
In physics, theory and experiment groups are separated.

Experiment : deals with huge accelerators, and sometimes produces the appliances.

Theory: does not conduct experiments, and deals with areas that cannot be tested experimentally.



What is the nature of forces?



How does our universe originate?

# 1. Introduction

## Nobel laureates in Particle Physics

Experiment:

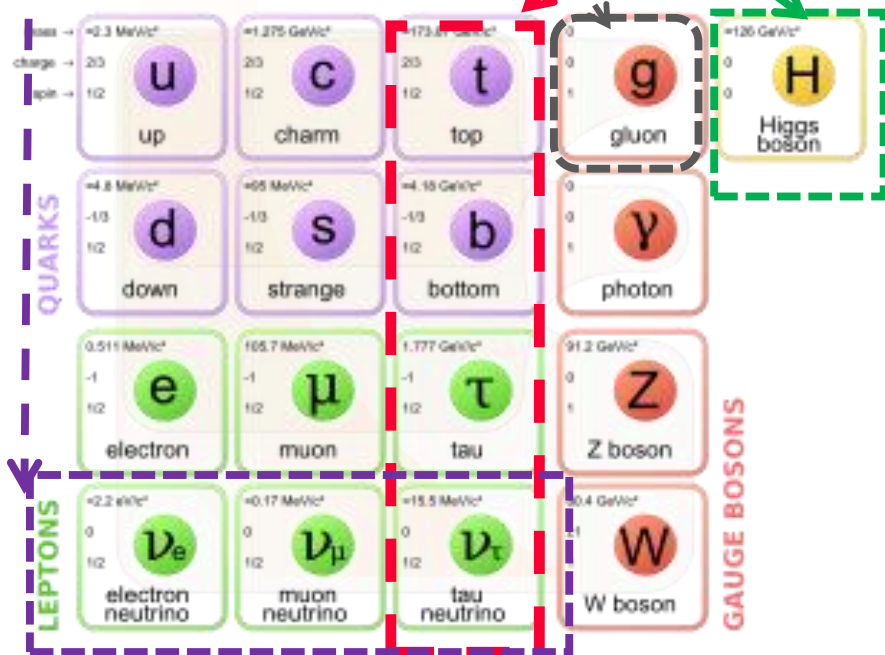
Kajita • McDonald(2015), Koshiba • Davis(2002)

Theory:

Higgs • Englert(2013), Nambu • Kobayashi • Maskawa(2008)

Gross • Politzer • Wilczek (2004)

⇒ Top researchers in this field.



Press conference on Nobel Prize in 2008.

**Makoto Kobayashi** (1972-79) and **Toshihide Maskawa** (1970-76, 1990-97) belonged to

Theoretical Particle Physics Group.

They predicted the existence of third-generation quarks/leptons.

Quoted from Kyodo Tsushin in Dec. 10 2008.

# 1. Introduction

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Researches in science require mathematics.



*Physics is written in this grand book - I mean the universe - which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of **mathematics**.*

"[The Assayer](#)" (Galileo Galilei, 1623)

$$S = -\frac{N}{4} \text{tr}[A_\mu, A_\nu]^2 + \frac{N}{2} \text{tr} \bar{\psi}_\alpha (\Gamma^\mu)_{\alpha\beta} [A_\mu, \psi_\beta]$$

[IKKT matrix model](#)

$$T = \frac{1}{2} : \ddot{j} j :$$

[Sugawara construction](#)

$$\begin{pmatrix} V_{ud} & V_{us} & V_{ub} \\ V_{cd} & V_{cs} & V_{cb} \\ V_{td} & V_{ts} & V_{tb} \end{pmatrix}$$

[Kobayashi-Maskawa matrix](#)



“Grand cosmos and Elementary domain” (Kyo Ikebe). A wall relief in the 4th building of KEK. A group photo in [a workshop in Sep. 2013](#).

# 1. Introduction

How to be a university faculty.

Apply for job openings.

(The job opening in 2007, when I won the position. [JREC-IN](#) is a leading database.)

What do we need to do in order to win the position?

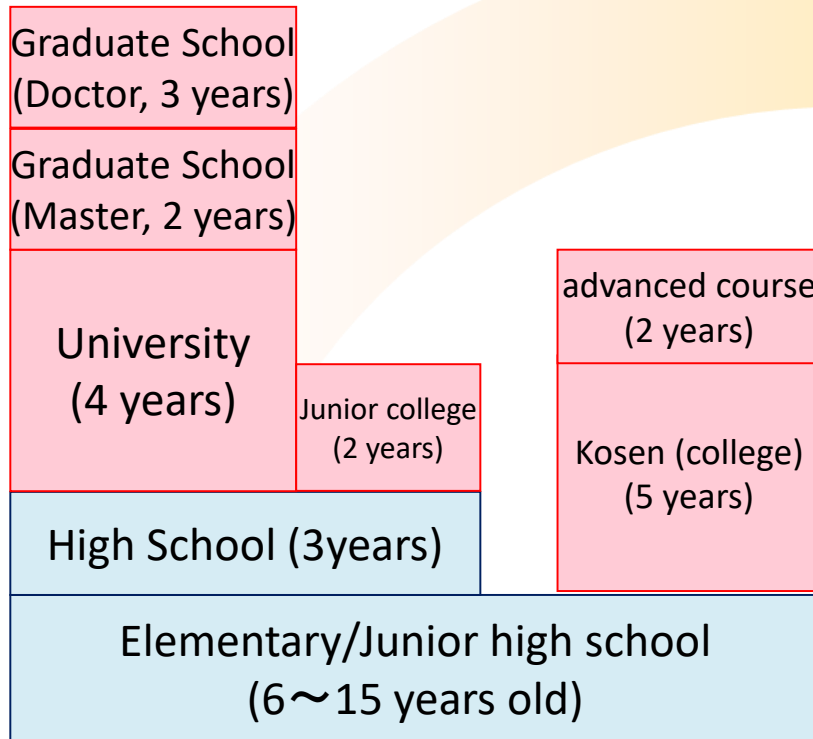


[トップ](#) > 求人公募情報検索

求人公募情報検索

研究分野で探す - 詳細情報

データ番号 Data item number	D107060056
公開開始日 Date of publication	2007年06月01日
更新日 Date of renewal	2007年06月04日
タイトル Title	摂南大学工学部数学・物理学系教室専任教員公募(解析学・数理物理学)
機関名 Institution	摂南大学
機関URL Institution URL	<a href="http://www.setsunan.ac.jp/">http://www.setsunan.ac.jp/</a>
部署名 Department	工学部 数学・物理学系教室



Universities, Junior college and KOSEN:  
Academic positions (usually requires Ph.D.)

Elementary, Junior-high and High School:  
Non-academic positions.

Job openings in universities/colleges

⇒ **Extremely exclusive and difficult**

**Postdoc issues** (job scarcities of Ph.D. holders)

# 1. Introduction

## Quote from recent news

More than 90% of Kyoto Univ's iPS researchers are **temporary workers**

(Sep. 15th 2017)

More non-tenure jobs among young researchers in national universities. (Asahi Shimbun, Nov. 22 2016)

### Request for Support

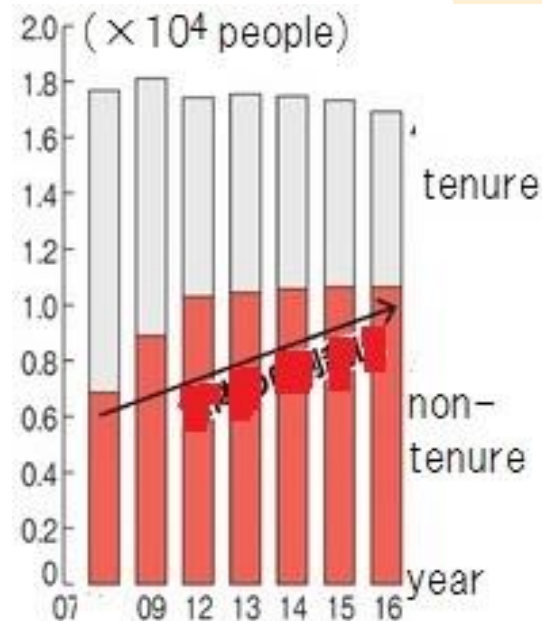
Before my career as a scientist, I became a medical doctor. However, as a resident treating patients suffering from intractable diseases, I realized I could best help a large number of patients by conducting basic research to understand disease mechanisms and develop new therapies. Thanks to a great research team, this basic research led to iPS cells, which was awarded the Nobel Prize for Physiology or Medicine in 2012.

iPS cells show great promise for regenerative medicine and drug discovery, especially for diseases that still have no effective treatment. To reach this promise, however, we need financial assistance to hire brilliant minds and create an excellent research environment.

That is why I ask for your help. Your gift will go a long way to our ultimate goal of using iPS cells to bring better health to all around the world.



**Shinya Yamanaka, MD, PhD**  
Professor, Director of Center for iPS Cell Research and Application (CiRA),  
Kyoto University, Japan





# 1. Introduction



## References

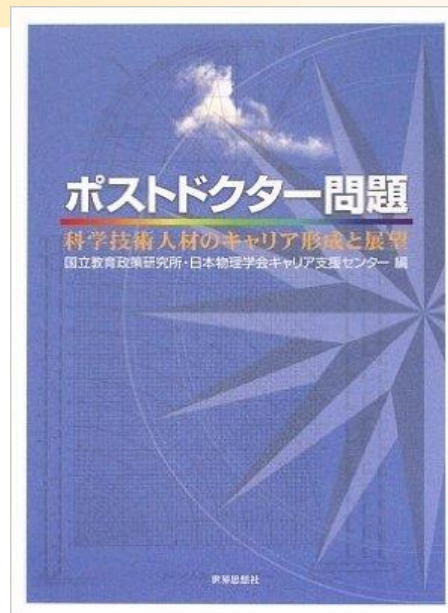
Kenji Tabata (part-time lecturer in Setsunan Univ.) wrote pp. 132-135.



1983  
ISBN: [9784250830396](https://www.isbn-international.org/product/9784250830396)



2007  
ISBN: [9784334034238](https://www.isbn-international.org/product/9784334034238)



2009  
ISBN: [9784790714163](https://www.isbn-international.org/product/9784790714163)



2015  
ISBN: [9784798912455](https://www.isbn-international.org/product/9784798912455)

# ドクターライフ!

PhD research project

"Prisoner's world"(quarterly, 2016~)

## Other articles:

- Shigeki Sugimoto (Professor in YITP) "Postdoc Issues" Group meeting in Division of Physics, Kyoto University Vol. 34, p137-150, 1998
- Enjoe-Toh (Novelist, Ph.D. in Tokyo Univ. in 2000, postdoc from 2000 to 2006 (34 years old), Akutagawa Prize in 2012) ["PD2PPD"](#) JPSJ 63(7), p564-566, 2008
- Masako Asano (Professor in Seikei Univ.) ["Postdoc Issues as Seen from the Membership of Soryushiron Group"](#) Soryushi-ron Kenkyu (Vol1-2) 2009
- ["The PhD factory"](#) Nature 472, 276-279, 2011
- MEXT ["Survey on Postdoctoral Fellows and Research Assistants"](#)
- Fairy Tale ["A village of 100 Ph.D. holders"](#)

# 2. What is graduate school?

Conducts researches and publish papers during 2-year master and 3-year doctoral courses.

Graduate school entrance rate (As of Mar. 2017):

Kyoto>>>Setsunan、 Science>>>Social

	<u>Kyoto</u> (Undergrad→Master)	<u>Kyoto</u> (Master→Doctor)	<u>Setsunan</u> (Undergrad→Master)	<u>Setsunan</u> (Master→Doctor)
Science	81.9%(253/309)	38.1%(101/265)	---	---
Engineering*	85.6%(852/995)	10.8% (76/701)	9.3%(42/453)	7.4%(2/27)
Literature**	26.4%( 59/223)	42.9% (42/98)	0.9% (2/216)	0.0%(0/1)
Business Administration	---	---	0.7% (2/260)	0.0%(0/1)
Economy	7.3% ( 18/246)	25.0% (10/40)	0.9%( 2/235)	0.0%(0/1)
Law	<b>28.6%( 96/336)</b> Many enroll in Law School.	3.9% (6/152)	0.8%( 2/227)	---(0/0)

# 2. What is graduate school?

- In graduate schools, the main duty is **research**, rather than classes and credits.
- In order to enroll in a graduate school, we need to pass the entrance exam (in September), but this is **NEVER** a "**necessary and sufficient condition**" to succeed in research career.

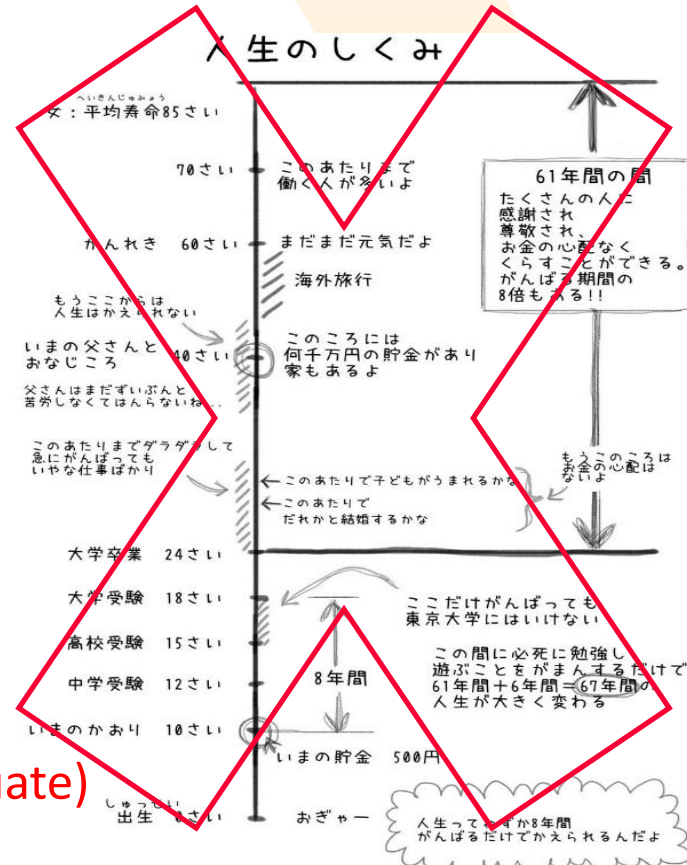
Quoted from a website of a graduate student in theoretical particle physics.

Make sure that you

- devote the whole 5 years to researches
- are aware that many cannot win academic positions despite their devotion.
- rank in the top 10% in physics (in prestigious (junior) high school/university) compared to others of your age.
- have an absolute motivation to study particle physics.
- can study particle physics at least 8 hours a day.

Otherwise, look elsewhere.

(snip) *Begin studying particle physics as soon as you pass the entrance exam.*



The triumph in graduate school (let alone, undergraduate) entrance exam never means the triumph in life!!

## 2. What is graduate school?

### ➤ 1st year of master course

read the references in particle physics

(In Theory groups, we follow the calculation, without experiments)

### ➤ 2nd year of master course

Conduct research activities with supervisors, and write a master thesis, which is typically 50-100 pages long.

**A 10,000-hour rule to be proficient.**

⇒ Study that much when we complete the master course.

# 2. What is graduate school?

arXiv.org > hep-th > arXiv:hep-th/0103003

Search  
(Help | Adv)

2001 March 3rd in March

High Energy Physics - Theory

## Investigation of Matrix Theory via Super Lie Algebra My master thesis [hep-th/0103003](https://arxiv.org/abs/hep-th/0103003)

Takehiro Azuma

[\(arXiv.org\)](https://arxiv.org/)

high-energy  
physics (theory)

(Submitted on 1 Mar 2001 (v1), last revised 21 Oct 2003 (this version, v7))

This paper reports the investigation of a matrix model via super Lie algebra, following the proposal of L. Smolin. We consider the  $osp(1|32, R)$  nongauged matrix model and  $gl(1|32, R)$  gauged matrix model, especially paying attention to the supersymmetry and the relationship with IKKT model. This paper is based on the collaboration with the collaboration with S.Iso, H.Kawai and Y.Ohwashi.

Comments: 87 pages, 18 figures. This paper is based on the collaboration with S. Iso, H. Kawai and Y. Ohwashi, and is submitted to Kyoto Univ. as a master's dissertation. (v7) Some typos corrected

- For the former commutation relation, we extract from  $m$  the fields of rank 1 :  $m \rightarrow A_i^{(+)}\Gamma^{i\frac{1+\Gamma^\sharp}{2}} + A_i^{(-)}\Gamma^{i\frac{1-\Gamma^\sharp}{2}}$ . Then the commutator is

$$\begin{aligned} [\delta_{\chi_L}^{(1)}, \delta_{\epsilon_R}^{(1)}]A_i^{(+)} &\rightarrow \frac{i}{16}(\bar{\chi}_L(A_j^{(+)}\Gamma^j\frac{1+\Gamma^\sharp}{2} + A_j^{(-)}\Gamma^j\frac{1-\Gamma^\sharp}{2})\Gamma_i\epsilon_R - \bar{\chi}_L\Gamma_i(A_j^{(+)}\Gamma^j\frac{1+\Gamma^\sharp}{2} + A_j^{(-)}\Gamma^j\frac{1-\Gamma^\sharp}{2})\epsilon_R) \\ &= -\frac{i}{8}\bar{\chi}_LA_j^{(+)}\Gamma_i{}^j\epsilon_R. \end{aligned} \quad (4.57)$$

- For the latter, we are faced with the same problem as in the previous case:

$$\begin{aligned} [\delta_{\chi_L}^{(1)}, \delta_{\epsilon_R}^{(1)}]A_i^{(-)} &\rightarrow -\frac{i}{16}(\bar{\epsilon}_R(A_j^{(+)}\Gamma^j\frac{1+\Gamma^\sharp}{2} + A_j^{(-)}\Gamma^j\frac{1-\Gamma^\sharp}{2})\Gamma_i\chi_L - \bar{\epsilon}_R\Gamma_i(A_j^{(+)}\Gamma^j\frac{1+\Gamma^\sharp}{2} + A_j^{(-)}\Gamma^j\frac{1-\Gamma^\sharp}{2})\chi_L) \\ &= -\frac{i}{8}\bar{\chi}_LA_j^{(-)}\Gamma_i{}^j\epsilon_R. \end{aligned} \quad (4.58)$$

These commutation relations reveal that the two-fold SUSY's are not independent of each other, but are connected by not the impurity  $W, C_{i_1i_2}$  and  $H_{i_1\dots i_4}$ , but the fields  $A_i^{(\pm)}$ . This is an unfavorable situation in the analysis of the SUSY transformation of this cubic model.

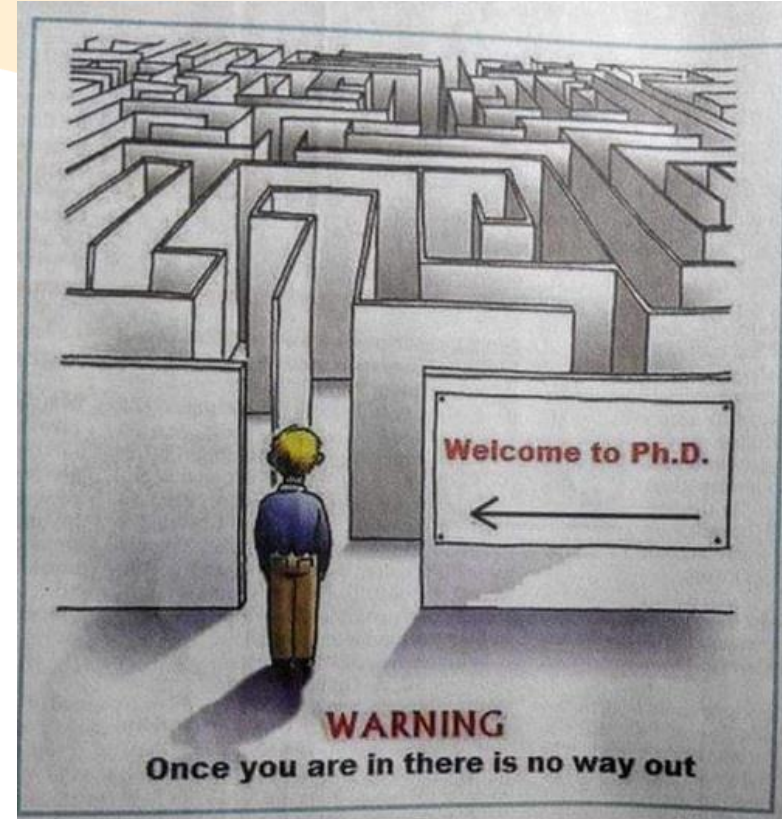
## 2. What is graduate school?

Doctoral course

Write as much research papers as possible during the 3-year doctoral course.

*From now on, we are evaluated according to the quality/quantity of our research papers.*

***Publish or Perish***



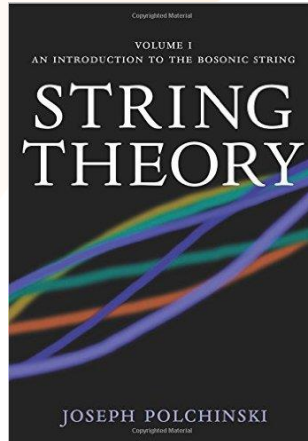
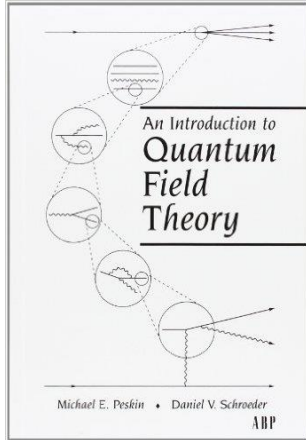
- Deliver talks in domestic/international workshops.
- ⇒ Be recognized by researchers in the same fields.

***Study by ourselves*** what is necessary for research.

# 2. What is graduate school?

English is a lingua franca in science.

Textbooks in English Archive in English ([arXiv.org](https://arxiv.org))



Cross-lists for Tue, 23 May 17

[3] [arXiv:1705.07653](https://arxiv.org/abs/1705.07653) (cross-list from hep-th) [pdf, other]

### Four-dimensional CDT with toroidal topology

Jan Ambjørn, Jakub Gizbert-Studnicki, Andrzej Görlich, Kevin Grosvenor, Jerzy Jurkiewicz

Comments: 28 pages, 15 figures

Subjects: High Energy Physics - Theory (hep-th); General Relativity and Quantum Cosmology (gr-qc); High Energy Physics - Lattice (hep-lat)

3+1 dimensional Causal Dynamical Triangulations (CDT) describe a quantum theory of fluctuating geometries without the introduction of a background geometry. If the topology of space is constrained to be that of a three-dimensional torus we show that the system will fluctuate around a dynamically formed background geometry which can be understood from a simple minisuperspace action which contains both a classical part and a quantum part. We determine this action by integrating out degrees of freedom in the full model, as well as by transfer matrix methods.

[4] [arXiv:1705.07812](https://arxiv.org/abs/1705.07812) (cross-list from hep-th) [pdf, ps, other]

### A new method for probing the late-time dynamics in the Lorentzian type IIB matrix model

Takehiro Azuma, Yuta Ito, Jun Nishimura, Asato Tsuchiya

Comments: 16 pages, 13 figures

Subjects: High Energy Physics - Theory (hep-th); High Energy Physics - Lattice (hep-lat)

The type IIB matrix model has been investigated as a possible nonperturbative formulation of superstring theory. In particular, it was found by Monte Carlo simulation of the Lorentzian version that the 9-dimensional rotational symmetry of the spatial matrices is broken spontaneously to the 3-dimensional one after some "critical time". In this paper we develop a new simulation method based on the effective theory for the submatrices corresponding to the late time. Using this method, one can obtain the results for  $N \times N$  matrices by simulating matrices typically of the size  $O(\sqrt{N})$ . We confirm the validity of this method and demonstrate its usefulness in simplified models.

- We deliver talks and have Q/A in English.
- We collaborate with foreign researchers.
- We sometimes work in foreign research institutes.

(No need to study the local language, when we work in non-English-speaking countries )



## 2. What is graduate school?

We sometimes operate computers.

Numerical simulation is a "third method", in addition to theory and experiment.

(I participate in ["Priority Issue 9 to be tackled by Using Post-K Computer"](#) )



## 2. What is graduate school?

At the end of the 3-year doctoral course  
⇒ submit a Ph.D. thesis.

- Summarize our research, typically within 100 pages.
- In Ph.D. defense, we make a 1-hour presentation  
(D means defense, as well as doctor)
- In theoretical particle physics, we usually obtain Ph.D.  
within 3 years, but...

*Ph.D. and rice grains at the bottom of our feet have in common that they make us feel uncomfortable without getting them and that they do not make dishes.*

# 2. What is graduate school?

## Matrix models and the gravitational interaction

Takehiro Azuma

(Submitted on 18 Jan 2004)

high-energy physics (theory) 2004 January 120th in January

hep-th/0401120  
(arXiv.org)

The large-N reduced models have been proposed as the nonperturbative formulation of the superstring theory. One of the most promising candidates is the IIB matrix model. While there have been a lot of interesting discoveries of the IIB matrix model in relation to the gravity, we have a lot of problems to surmount, if a large-N reduced model is to be an eligible framework to unify the gravitational interaction. Firstly, it is still an enigma how we can realize the local Lorentz invariant matrix model. In addition, we need to understand how we can describe the curved spacetime more manifestly, in terms of a large-N reduced model.

This thesis discusses several attempts to address these issues concerning the gravitational interaction. This thesis is based on the following author's works [hep-th/0102168](#), [hep-th/0204078](#), [hep-th/0209057](#) and [hep-th/0401038](#).

Comments: 96 pages, 38 figures, Dissertation submitted to Kyoto University in candidacy for the degree of Doctor of Philosophy

The action (C.38) is also analyzed via the heat bath algorithm. Firstly, we note that the quartic commutator in (C.38) is rewritten as

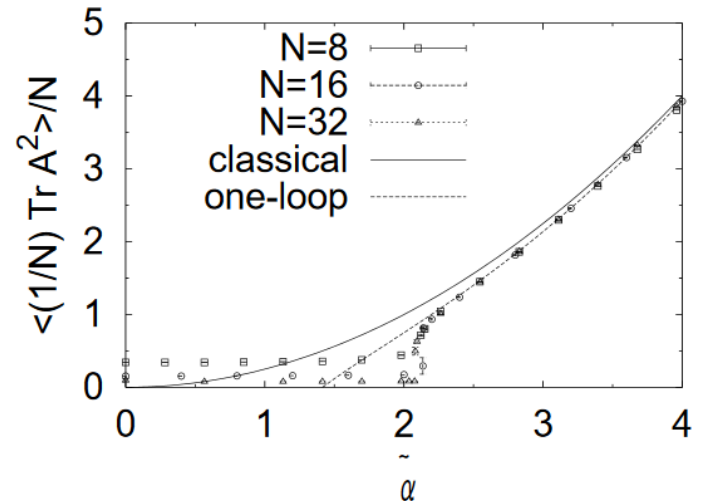
$$\begin{aligned} -\frac{N}{4} \sum_{\mu, \nu=1}^d \text{Tr}[A_\mu, A_\nu]^2 &= -\frac{N}{2} \sum_{1 \leq \mu < \nu \leq d} \text{Tr}[A_\mu, A_\nu]^2 = N \sum_{1 \leq \mu < \nu \leq d} [\text{Tr}(A_\mu^2 A_\nu^2) - \text{Tr}(A_\mu A_\nu A_\mu A_\nu)] \\ &= -\frac{N}{2} \sum_{1 \leq \mu < \nu \leq d} \text{Tr} G_{\mu\nu}^2 + 2N \sum_{1 \leq \mu < \nu \leq d} \text{Tr}(A_\mu^2 A_\nu^2), \end{aligned} \quad (\text{C.39})$$

where  $G_{\mu\nu} = \{A_\mu, A_\nu\}$ , and these are hermitian matrices because these are anti-commutators of  $A_\mu$ . This leads us to introduce the auxiliary fields  $Q_{\mu\nu}$  as

$$\tilde{S} = N \sum_{1 \leq \mu < \nu \leq d} \left( \frac{1}{2} \text{Tr} Q_{\mu\nu}^2 - \text{Tr}(Q_{\mu\nu} G_{\mu\nu}) + 2\text{Tr}(A_\mu^2 A_\nu^2) - \frac{\lambda}{2k+1} N \epsilon_{\mu_1 \dots \mu_{2k+1}} \text{Tr} A_{\mu_1} A_{\mu_2} \dots A_{\mu_{2k+1}} \right). \quad (\text{C.40})$$

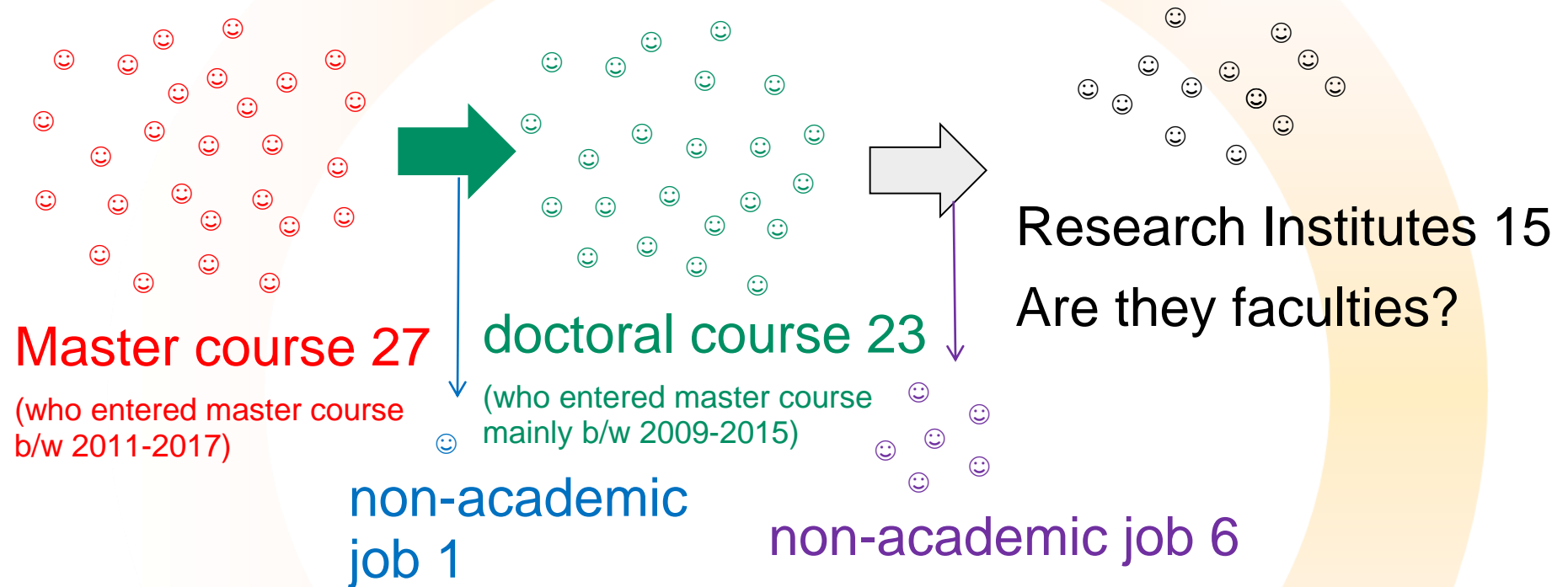
Here,  $Q_{\mu\nu}$  are hermitian matrices, and satisfy  $Q_{\mu\nu} = Q_{\nu\mu}$ .  $Q_{\mu\nu}$  is defined only for  $\mu \neq \nu$ . Of course, the action (C.40) is equivalent to (C.38) after we integrate out  $Q_{\mu\nu}$ :

$$\tilde{S} = \frac{N}{2} \sum_{1 \leq \mu < \nu \leq d} \text{Tr}(Q_{\mu\nu} - G_{\mu\nu})^2 + S.$$



# 3. Postdoc Issues

Theoretical particle physics lab. in Kyoto University (Past 7-year record in 2017)



It is almost impossible to be a university faculty as soon as we obtain the Ph.D.

We usually continue research as a **Postdoc**.

- **Postdoc**: stands for "Postdoctoral research fellow"
- Postdoc refers to **researchers with temporary appointment (typically 2-3 years)**. They lose jobs when the appointment expires.  
⇒ They need to pursue next jobs by themselves.
- There is no teaching duty in the institute, but they often work as a "part-time lecturer".

(Educational career is crucial in academic job openings)

Many postdocs pursue a ***tenure (a permanent appointment)*** in universities/colleges.

# 3. Postdoc Issues

We work as [a postdoc abroad](#), as well as in Japan.

(Conversely, we accept foreign postdocs in Japan)

We apply for/inquire about postdoc job openings all over the world.

⇒ I applied for 50 openings and won 2 offers.

I worked for "Tata Institute of Fundamental Research([TIFR](#))" from 2006 to 2008.



# 3. Postdoc Issues

- The number of the academic jobs is decreasing.  
⇒ Too severe competitions, with 50-100 applicants in one position.
- More and more jobs with temporary appointment (such as **Project Assistant Professor**)  
⇒ **We are jobless** once the appointment expires.

*Monkeys are still monkeys if they come down from a tree. But professors, as well as councilors, come down to "nothing" once the appointment expires.*

- Postdoc positions are competitive ⇒ We research **without salary** when we fail.
- It is also difficult to give up research and go to industry.  
⇒ Mismatch with corporate research jobs.  
Ageism in Japanese companies.  
The older, the more disadvantageous.

We call such job scarcities of Ph.D. holders **"postdoc issues"**

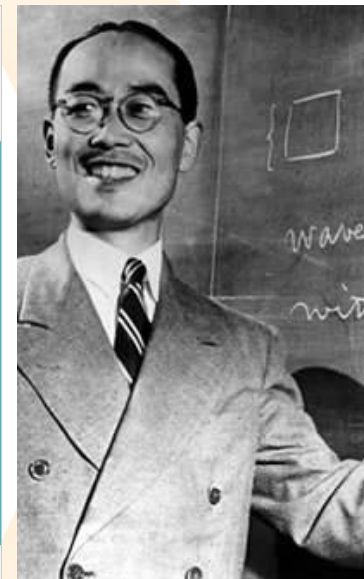
# 3. Postdoc Issues

## "My thought on postdoc issues" (Katsunori Hijikata)

*The Postdoc issues finally appeared in a newspaper. In the academic meeting held in Sapporo last year, young scientists passed out flyers on the postdoc issue, which asserted "How do you take care of our lives?". My university established a physics department in 1967. However, these positions were filled by outstanding scientists, before I could say Jack Robinson. We no longer have job openings.*

*(snip)*

*In my neighborhood, there are many "Jewish mothers", who put their children through hard studies from their elementary school days. My wife is also such a "Jewish mother", and spends more money than the salary of a part-time lecturer on cram schools. She wishes my kid to keep studying until enrolling in a university. Though there is nothing wrong with studying in a university, the most earnest students come down to postdocs, don't they? I sometimes complain to my wife, "Do you want my kid to be a lumpen?" But this does not work, since she is not very interested in the career path after university.*



Quoted from the monthly newsletter of "[Quantum Mechanics II, Iwanami Kouza](#)" (1972, edited by **Hideki Yukawa**, a **Nobel Laureate in Physics in 1949**).



# 3. Postdoc Issues

Soryushiron Group  
(1071 members, as  
of 2008)

Nuclear Theory  
Division  
(292 members)

Particle Theory  
Division  
(749 members)

Other 30  
members

(1) Surveys on "**Particle Theory Division**" of "Soryushiron Group" by "Postdoctoral Forum"

(which discusses the postdoc issues and lobbies the organizations, such as MEXT).

➤ Of 93 postdoc respondents,

Salaried 52 (56%), **Non-salaried 41 (44%)**



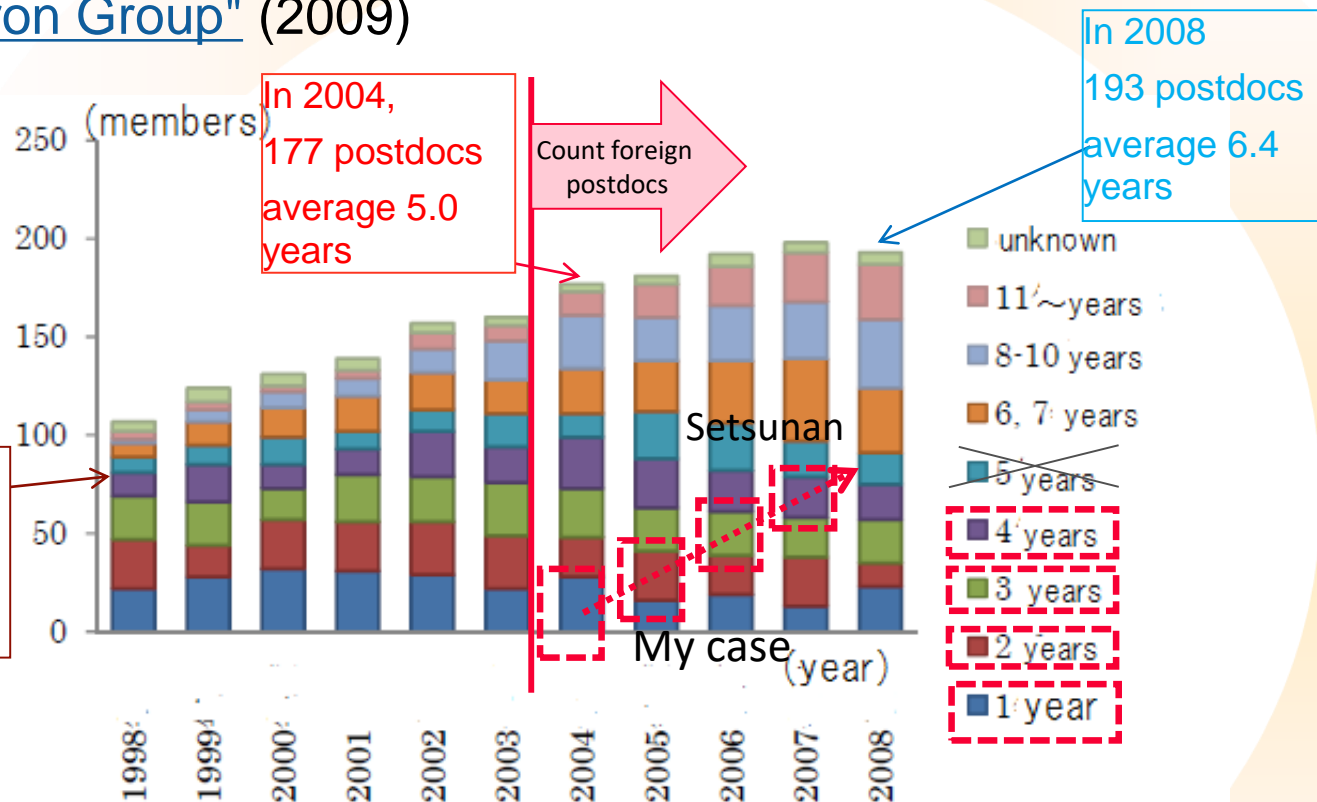
**They pay a tuition (30,000 JPN/month) as research fellows, and make a living as part-time lecturers.**

➤ Job openings in theoretical particle physics : 6~7/year  
⇒ Too scarce job openings for postdocs.

# 3. Postdoc Issues

## (2) Surveys on "Particle Theory Division".

Masako Asano "[Postdoc Issues as Seen from the Membership of Soryushiron Group](#)" (2009)

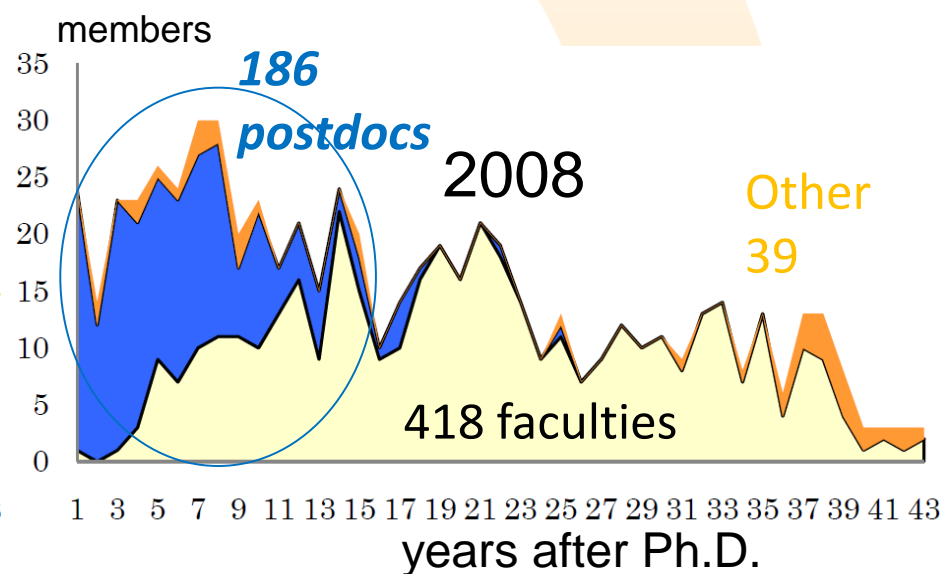
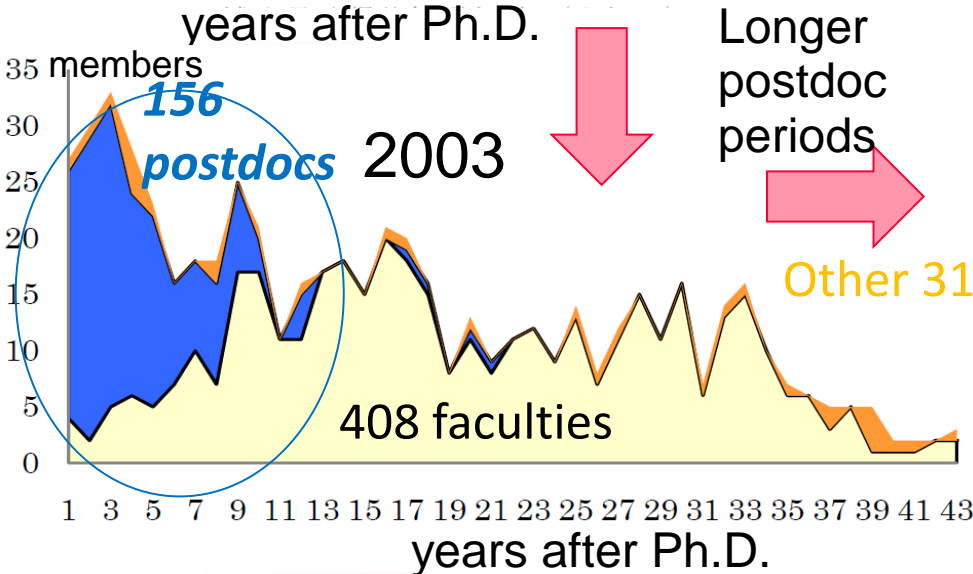
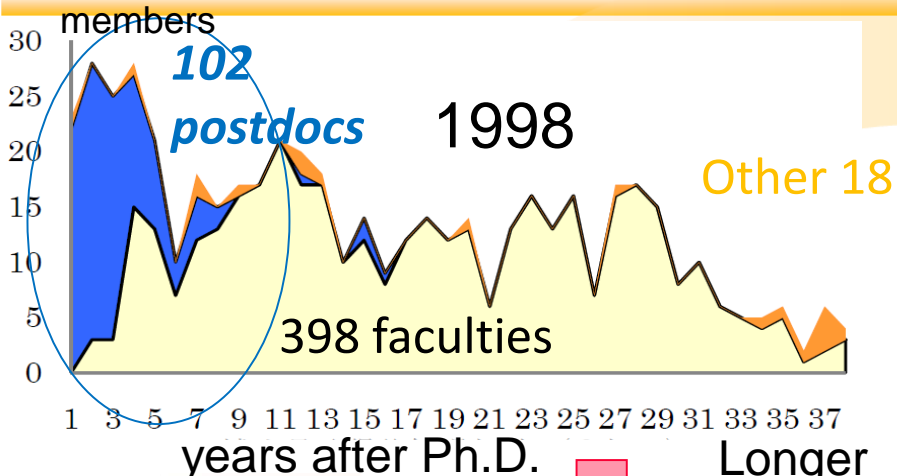


How long have you been a postdoc?

(In 2008: Of 749 members, 53 students, **193 postdocs**, 431 faculties, 69 other members)

# 3. Postdoc Issues

## Positions "t"-years after Ph.D.

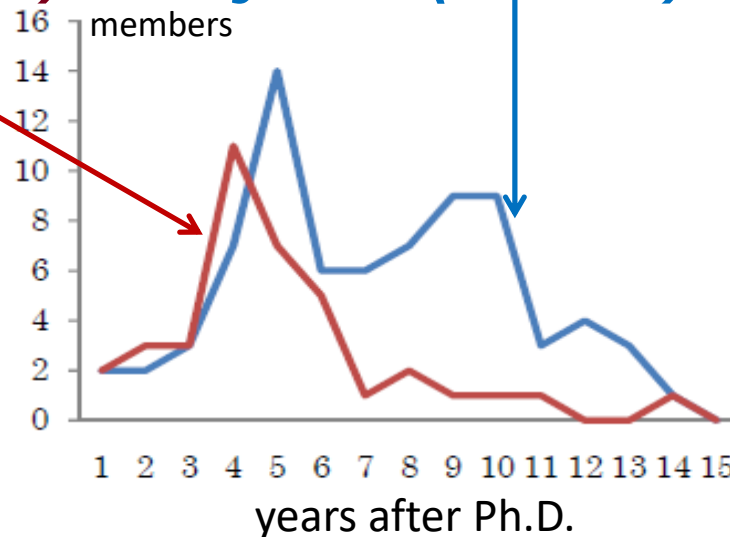


# 3. Postdoc Issues

How long had you been a postdoc when you got a job?

⇒ Average of "Particle Theory Division"

**5.1 years ('99-03), 7.2 years ('04-08)**



· **38 ('98-03)** and **76 ('04-08)** won the job.

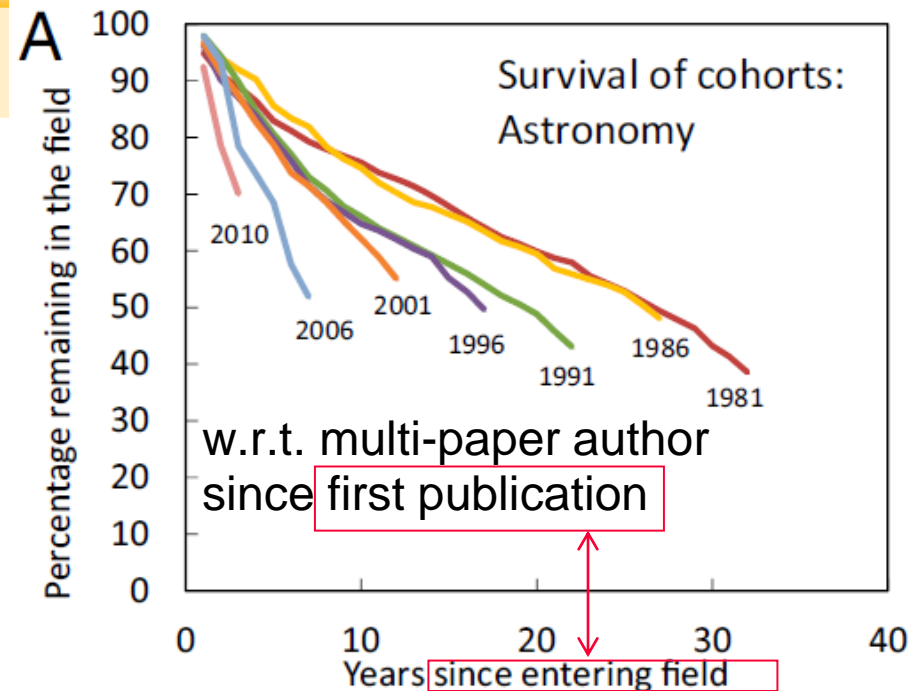
Apparently the situations have improved, but...

**More non-tenure jobs among young researchers.**

# 3. Postdoc Issues

(3) Surveys in "Changing demographics of scientific careers: The rise of the temporary workforce"

S. Milojević, F. Radicchi, and J.P. Walsh,  
[PNAS Dec. 11, 2018 115 \(50\) 12616-12623](#)



Why have the "postdoc issues" become severer?

1. More graduate students due to "strategic focus on graduate schools".
2. More postdocs due to "10,000-postdoc program".
3. Decline in university/college academic positions due to lower birth rate.

# 4. Conclusion

## Are "postdoc issues" actually problems?

Reasons for "No", playing the devil's advocate.

- Isn't it their responsibility, since they pursued their dream?
- Only the "creme de la creme" can survive in sports, show business, shogi etc.

(A baseball player [Miyamoto](#) (from Setsunan Univ.) retired without professional debut.)

Isn't their competition severer?

- Jobless, crime victims, handicapped, intractable disease patients
- Shouldn't they be salvaged instead of postdocs?

- Some research fields suffer being heirless, instead of jobless.
- Is lifetime employment actually an ideal system ?

# 4. Conclusion

## Are "postdoc issues" others' affairs ?

- Your friends who were so academically talented as to enroll in a prestigious university may suffer "postdoc issues" in the future.
  - Policies strict to academia
    - [Budget screening against supercomputers](#) (2009)
    - Abolition of social science faculties
    - Global v.s. Local university
    - Abolition of Okayama Institute for Quantum Physics (2017)
    - [Budget cut for science by Trump Regime in America](#) (2017)
- ⇒ Do you espouse/oppose such policies?
- Abuse stemming from the ignorance/prejudice against postdocs ([discrimination against postdocs](#), [calling curators cancer](#), etc...)



# 4. Conclusion

## Are "postdoc issues" others' affairs ?

➤ Universal lessons for non-Ph.D. career path

The risk in career path of pursuing the dream.

The bottom suffer poverty despite their dedication and devotion to their dream.

Ichiro (baseball), Osamu Tezuka (cartoon), Yoshiharu Habu (shogi)...

Fledging baseball players, cartoonists, shogi players...

Top researchers  
⇒ Nobel/Fields prize

**Postdoc Issues of researchers**

*"The endowment of running 100m in 11 seconds flat is the most pernicious."* (Takuya Senda (2014) ISBN:[9784569819280](https://www.amazon.co.jp/dp/9784569819280))