



ICRR External Review 2013  
January 16-18, 2013

# Introduction of the Institute for Cosmic Ray Research (ICRR)

January 16, 2013

Takaaki Kajita, Director, ICRR

# Outline

- Purpose of this External Review meeting
- History of ICRR
- ICRR after 2006
- Structure of ICRR
- Inter-University Research programs
- Educational Activities

# Purpose of this External Review meeting

- In order to improve the activities of ICRR, the activities should be checked and evaluated by the external experts from the related fields.
- We would like to ask the Review Committee to evaluate;
  - the scientific activities of ICRR, such as the achievements, present activity and the future directions
  - organizational issues of ICRR, such as the resource allocation, relation with the outside groups/organization (Japanese cosmic ray community (CRC), KEK, NAOJ, Kavli-IPMU, Physics department, ...), and graduate education.
  - whatever the advise to ICRR.

# Information related to the Purpose of this External Review meeting

- External Review meetings of ICRR have been held in approximately every 6 years. The previous one was held in 2006, and the review report was written in 2007.
- As of 2004, the Japanese National Universities became independent administrative agencies (National University Corporation). Each University is reviewed in every 6 years. ICRR is also reviewed within this scheme as a research institute of the University of Tokyo.
- As of 2010, ICRR became “Joint Usage / Research Center”. These Centers will be reviewed in every 6 years, almost synchronized with the University review.
- Therefore, ICRR may refer the review report from this external review in the “National University Corporation” and “Joint Usage / Research Center” reviews.

# History of ICRR (before 2007)

Year	
1953	Established as the Cosmic Ray Observatory of the Univ. of Tokyo (@Mt. Norikura)
1976	Reorganized as the Institute for Cosmic Ray Research (ICRR) of the Univ. of Tokyo (@Tanashi, Tokyo)
1977	Akeno Observatory of ICRR was established
1983	Kamiokande experiment started (joint experiment between U.Tokyo-ICRR-KEK)
1990	AGASA (100 km <sup>2</sup> array) constructed
1992	Cangaroo (TeV gamma ray experiment @ Woomera, Australia) started
1993	Construction of the Tibet AS $\gamma$ experiment started
1995	Kamioka Observatory was established
1996	Super-Kamiokande experiment started
2000	ICRR moved to Kashiwa
2001	Accident in Super-Kamiokande

# History of ICRR (before 2007, cont'd)

Year	
2003	International Cosmic Ray Conference
	Construction of Telescope Array (TA) for the highest energy cosmic rays started
	Construction of Canagroo-III completed
2004	ICRR structure was changed to 3 divisions (see later)
2006	Super-Kamiokande full recovery

# ICRR after 2006

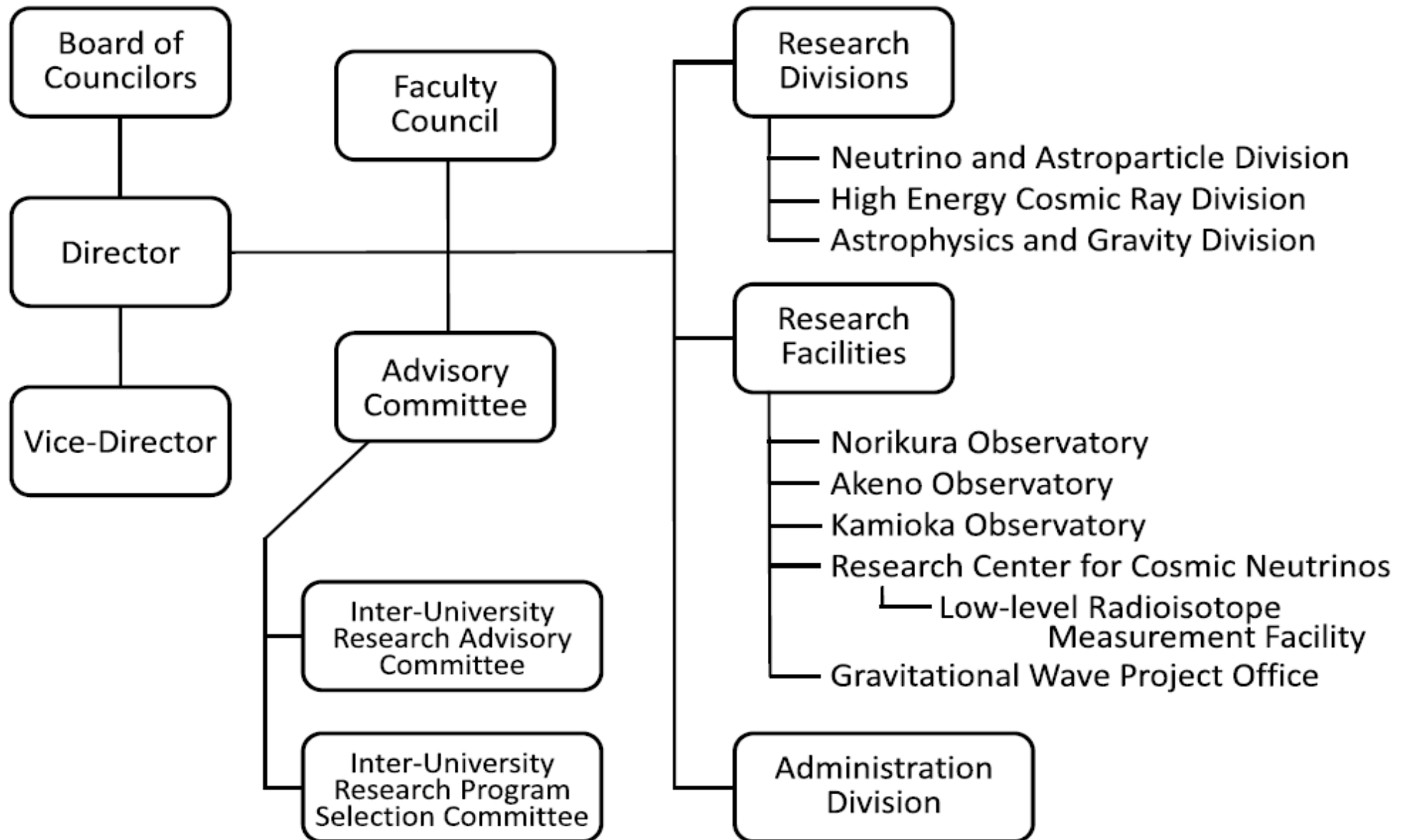
Year	
2007	The committee for the planning of the future ICRR research projects was formed. (Report in 2008)
2008	The Telescope Array (TA) experiment started the observation Super-Kamiokande-IV with the new electronics started
2009	High energy astrophysics group (theory) was formed
2010	The T2K (Tokai-to-Kamioka) long baseline experiment started data taking ICRR was selected as one of “Joint Usage / Research Center” The construction of the Large scale Cryogenic Gravitational wave Telescope (its present name is KAGRA) was approved The XMASS dark matter experiment started data taking
2011	Earthquake (March 11) The Gravitational Wave Project Office was established The T2K experiment published the indication for $\nu_{\mu} \rightarrow \nu_e$ oscillation

# ICRR after 2006 (cont'd)

Year	
2011-2012	The CANGAROO-III experiment and the emulsion development system finished the operation
2012	The first spring school on Universe and Elementary Particle was held in order to encourage graduate course studies in ICRR (second one to be held in March 2013)
	The TA experiment published the sharp spectrum change in the highest energy cosmic rays, which is consistent with the expected GZK cut-off
	The committee for the planning of the future ICRR research projects was formed. (CRC is also discussing the future plan. This committee share the scientific inputs by co-hosting town meetings.)
2013	The ICRR External Review Committee meeting



# Structure of ICRR



# ICRR staffs (2012)

## Scientific and Technical staffs

Professors	Associate professors	Research associates	Technical Staffs	Project associate professors <sup>1</sup>	Project research associates <sup>1</sup>	Post-doc fellows	Total
9	14	14	8	1	14	14+3 <sup>2</sup>	77

- 1) Project Associate professors and Project research assistants have fixed terms.
- 2) 3 JSPS Post-doc fellows studying in ICRR.

## Administration office, assistants, etc

Administration office(permanent )	Assistants @administration office	Technical assistants	Secretaries	Dormitory staffs etc	Total
7	6	10	11	10	44

# Research Divisions

Division	Projects and groups	Personnel (faculty members only), (*):head as of 2012
Neutrino and Astroparticle Division	Super-Kamiokande T2K XMASS Hyper-Kamiokande R&D	M.Nakahata(*), Y.Hayato, T.Kajita, Y.Kishimoto, K.Okumura, S.Moriyama, M.Shiozawa, Y.Suzuki
High Energy Cosmic Ray Division	TA (Telescope Array) Cangaroo (finished) Tibet AS $\gamma$ High Energy Astrophysics Ashra CTA R&D	M.Teshima(*), R.Enomoto, M.Fukushima, H.Sagawa, M.Sasaki, M.Takita, T.Terasawa, T.Yoshikoshi
Astrophysics and Gravity Division	KAGRA Observational Cosmology Primary Cosmic Ray Theory (elementary particles and cosmology)	M.Kawasaki(*), M.Ibe, S.Kawamura, K.Kuroda, S.Miyoki, M.Ohashi, M.Ouchi

# Research Facilities

Facilities	Duties	Personnel (faculty members only), (*):head as of 2012
Kamioka Observatory	Super-Kamiokande and other inter-university research programs at Kamioka	Y.Suzuki(*), Y.Hayato, Y.Kishimoto, M.Nakahata, S.Moriyama, M.Shiozawa
Norikura Observatory	Inter-university research programs at Norikura	M.Takita(*)
Akeno Observatory	Inter-university research programs at Akeno	H.Sagawa(*), M.Fukushima
Research Center for Cosmic Neutrinos	Computer Facility and Kashiwa low-background facility (and their inter-university research programs)	T.Kajita(*), K.Okumura

Internal organization of ICRR (not registered in U.Tokyo)

Gravitational Wave Project Office	Construction of KAGRA	K.Kuroda(*), S.Kawamura, S.Miyoki, M.Ohashi
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# Overseas Experimental Sites

Experiment	Location	Remarks
TA	Utah, USA	Highest energy cosmic ray
Tibet AS $\gamma$	Yangbajing, Tibet, China	Cosmic Ray around the knee, Gamma ray around 100TeV
Cangaroo-III	Woomera, Australia	TeV gamma ray Finished and disassembled in March 2012

# Inter-University Research Programs

Activities as “Joint Usage / Research Center” (previous Inter-university Research Institute)

- Proposal deadline: Early January
- Selection by the Inter-University Research Program Selection Committee: March
- Period of the research: April to March next year**
- Workshop on the Inter-University Research Program: December
- Research report: Before the end of March

FY	2006	2007	2008	2009	2010	2011	2012
Neutrino and Astroparticle Div.	34	35	35	32	31	33	34
High Energy Cosmic Ray Div.	39	45	45	42	42	46	43
Astrophysics and Gravity Div.	10	9	9	7	12	15	17
Others (primary cosmic rays, computing, etc)	8	10	10	12	11	10	12
<b>Total</b>	<b>91</b>	<b>99</b>	<b>99</b>	<b>93</b>	<b>96</b>	<b>104</b>	<b>106</b>

# Educational activities (as the members of the Physics (and Astronomy) departments

	2006	2007	2008	2009	2010	2011	2012	(2013)
Master students	18	16	21	19	17	14	19	(19+9)
Master theses	13	3	13	6	12	5		
Doctor students	21	29	21	21	13	15	12	
Doctor theses	1	7	5	9	3	2		

## Some new educational activities

- 1) The first Spring School on Universe and Elementary Particles (for the 3<sup>rd</sup> year undergraduate students) started in March 2012 ( the 2<sup>nd</sup> one to be held in March 2013).
- 2) A meeting that was organized by ICRR students for the presentation of the student research activities was held in Feb. 2012 involving all the ICRR students (the 2<sup>nd</sup> one to be held in Feb. 2013). The Director Prize was presented to one student.
- 3) In order to have better communication among the ICRR students, common rooms for the first year master course students have been arranged since April 2012.