

News

IPMU Was Given the Highest Grade S in the WPI Interim Review

The five WPI centers including IPMU were selected by the Program Committee in FY 2007 aiming to establish internationally opened and globally visible institutions in Japan, and they were launched in October 2007. This year, these five initial WPI centers were subjected to an interim evaluation after four years since their launch.

The result of the interim evaluation was announced on December 14, 2011 by MEXT; only IPMU was given the highest grade “S” (superior). The criterion for “S” is defined as: *Progress being made in establishing the center exceeds its initial goals. Even greater progress in developing itself as a “top world-level research center” is anticipated.* The report comments on the achievements of IPMU: *We all highly evaluate IPMU's past 4 years of activities and scientific achievements. During a short period, IPMU has established itself as a world-renowned institute from scratch. IPMU has demonstrated outstanding progress toward achieving the goals of the WPI program in all areas — quality of science, globalization, interdisciplinary approach, and organizational reform. The leadership of Professor Murayama is highly appreciated. At the same time, however, the report points out some actions required as well as*

recommendations. Among others, the most notable is the following one, which is directed to the IPMU's host institute, UT (the University of Tokyo): *With the establishment of TODIAS, UT is in a position to give a certain number of tenured positions to IPMU. The committee anticipates that researchers may be concerned about their futures and leave IPMU for more secure positions. We recommend that UT should put some care into adopting a globally accepted meaning of “tenure.”*

The interim evaluation report from the MEXT is available at http://www.jsps.go.jp/j-toplevel/data/08_followup/FY2010result_e.pdf. Also, please visit the Director's Corner written by Hitoshi Murayama on page 3 of this IPMU NEWS.

First Stars Were Heavy, But Not Monstrous

Up to now, astrophysicists thought that the first stars could grow huge “monstrous” stars with mass as heavy as a few hundred times the sun. However, a group of international researchers, Takashi Hosokawa (JSPS fellow at NASA Jet Propulsion Laboratory), Kazuyuki Omukai (Associate Professor at Kyoto University), Naoki Yoshida (IPMU Associate Professor), and Harold Yorke (NASA Jet Propulsion Laboratory) reported the result of a new large-scale computer simulation of the formation and evolution of one of the first stars in the universe, showing that there is a mechanism with which the first star regulates its own growth; there remained a star with a mass of about 40 times that of the sun. So, contrary to expectations, the first stars were not monstrous. The research article appeared in *Science Express* on November 10, 2011 as an online version, and was published in *Science* 334 (2011) 1250 – 1253 on December 2, 2011.

Masaomi Tanaka Receives 2011 Inoue Research Award for Young Scientists

IPMU Postdoctoral Fellow Masaomi Tanaka (from December 1, 2011 he is at the National Astronomical Observatory of Japan, see Personnel Changes on page 33) won the 28th (2011) Inoue Research Award for Young Scientists for his doctoral thesis “Supernovae in Three Dimensions.” The award ceremony will be held on February 3, 2012.

1990 Nobel Laureate J. Friedman Gave a Public Lecture

Jerome Friedman, 1990 Nobel Prize Laureate in physics, gave an open lecture entitled “Exploring the Universe at the Largest and Smallest Distances” at an auditorium in the Chemistry Department Building on the University of Tokyo Hongo campus on October 6, 2011, jointly hosted by the IPMU and the University of Tokyo's Division of International Affairs, and co-hosted by JST (Japan Science and Technology Agency). He, together with R.E. Taylor and H.W. Kendall, received the 1990 Nobel Prize in Physics for their discovery of the inner structure of protons and neutrons—the first experimental evidence for the existence of quarks. Professor Friedman spoke to about 200 audiences in English, but Professor Hiroaki Aihara, of the Physics Department at the University of Tokyo and IPMU Deputy Director, interpreted Professor Friedman's talk in Japanese at short intervals.

You can also find IPMU Interview with Professor Friedman on pages 22 – 29 in this issue of IPMU NEWS.



1990 Nobel Laureate Prof. Friedman, giving a lecture

2011 Open House at UT Kashiwa Campus

An open house on the Kashiwa Campus of the University of Tokyo was held on October 21 and 22, 2011. The IPMU took part in this open house with a number of programs in addition to the usual poster presentations, etc. These included a lecture by IPMU Associate Professor Taizan Watari who spoke on a “Close-Up Look at Elementary Particles,” a Japanese play presented by IPMU foreign researchers “2011: A Space Odyssey,” a Digital Space Theater “Let’s Go On a Journey into Space” which utilizes a 4-Dimensional Digital Universe viewer “Mitaka” released by the National Astronomical Observatory of Japan, and IPMU Building Tours in Commemoration of the AIJ (Architectural Institute of Japan) Prize 2011 (see IPMU NEWS No. 14, p. 28). During the two days, a total of 6000 people visited the Kashiwa campus, and the IPMU attracted more than 1700 people.



Taizan Watari giving a lecture

WPI Research Center Joint Symposium “Leading Science and Your Future”

On November 12, 2011, a Joint Symposium of the six WPI research centers entitled “Leading Science and Your Future” was held at Fukuoka Bank Hall in Fukuoka City, hosted by Kyushu University’s I²CNER (International Institute for Carbon-Neutral Energy Research), a WPI center newly launched in 2010, and co-hosted by other 5 WPI centers. An audience of about 600 comprised

mostly high-school and junior high-school students invited from Kyushu and Yamaguchi Prefecture, with some other participants. The research activities of each WPI center were presented; from IPMU, Director Hitoshi Murayama spoke on “The Dark Side of the Universe.” He and other speakers also engaged in a panel discussion where they responded to questions from the representatives of the participating students.



A scene of the panel discussion

5th IPMU-ICRR Joint Public Lecture “Decoding the Universe”

Also on November 12, 2011, IPMU-ICRR (Institute for Cosmic Ray Research) joint public lecture entitled “Decoding the Universe” was held at the Koshiba Hall on the Hongo Campus of the University of Tokyo, with an audience of about 150 people. IPMU Associate Professor Tadashi Takayanagi gave a lecture entitled “The Mystery of the Black Hole Investigated by Means of Superstring Theory.”



Tadashi Takayanagi giving a lecture.

A Program to Encourage Female Students to Study Science “Look into the Universe!”

On November 23, 2011, a Program to Encourage Female Students to Study Science “Look into the Future!” was held at IPMU, jointly hosted by IPMU

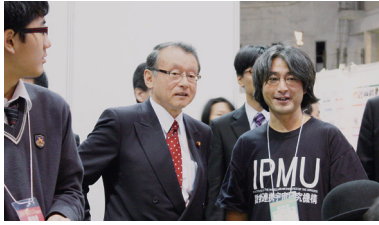
and ICRR, and about 30 high school and junior high school female students participated. This is an attempt to encourage female students in studying science as their future path by inspiring their interests in the fields of science. The students listened to a lecture given by IPMU Postdoctoral Fellow Takahiro Nishimichi, “Challenging the Mystery of the Accelerating Universe,” experienced either theoretical calculation or experimental measurement of the zenith-angle distribution of cosmic rays, and had a pleasant talk with female IPMU Postdoctoral Fellow Alexie Leauthaud and other researchers.



Alexie Leauthaud and female students talking at lunchtime

IPMU Joined the WPI Presentation at “Science & Technology Festa in Kyoto 2011”

On December 17 and 18, 2011, the “Science and Technology Festa in Kyoto 2011” was held at the Kyoto International Conference Center. It was well attended with a total of more than 5,000 participants. All six WPI centers jointly exhibited their research activities. IPMU ran an entire single booth. A visual demonstration, called “Digital Space Theater,” and video presentations related to the IPMU research activities were very popular. IPMU also distributed for free 1,000 specially designed paper bags on which mathematical equations were printed against a dark background. They were very popular and sold out. Both days, IPMU Director Hitoshi Murayama volunteered his services as a booth staff member.



IPMU Director Murayama spoke with Mr. Masaharu Nakagawa, Minister of Education, Culture, Sports, Science and Technology at the IPMU booth



IPMU Director Murayama spoke with Mr. Motohisa Furukawa, Minister of State for Science and Technology Policy at the IPMU booth

IPMU Seminars

1. "Did galaxies reionize the Universe: progress and challenges"
Speaker: Richard Ellis (Caltech)
Date: Oct 03, 2011
2. "Gregory-Laflamme as the confinement/deconfinement transition in holographic QCD"
Speaker: Takeshi Morita (University of Crete)
Date: Oct 04, 2011
3. "Cosmic Dawn: The Quest for the First Stars and Galaxies"
Speaker: Richard Ellis (Caltech)
Date: Oct 05, 2011
4. "Jet substructure and new physics searches at the LHC"
Speaker: Biplob Bhattacharjee (IPMU)
Date: Oct 06, 2011
5. "Observational probes of dark energy: the role of HSC and PFS"
Speaker: Richard Ellis (Caltech)
Date: Oct 06, 2011
6. "Gamma-ray probes of dark matter annihilation"
Speaker: Shin'ichiro Ando (Amsterdam)
Date: Oct 11, 2011
7. "Millimeter Survey of Distant Dusty Starburst Galaxies"
Speaker: Bunyo Hatsukade (Kyoto)
Date: Oct 13, 2011
8. "Constraining the Complete Star Formation History of Observable Galaxies from $z=0$ to $z=8$ "
Speaker: Peter Behroozi (Stanford)
Date: Oct 13, 2011
9. "On the Taxonomy of Holographic Fermi/Non-Fermi Liquids"
Speaker: Norihiro Iizuka (CERN)
Date: Oct 14, 2011
10. "Linking Star Formation Histories with Galaxy Assembly"
Speaker: Amanda E. Bauer (Australian Astronomical Observatory)
Date: Oct 20, 2011
11. "Measurement of the neutrino velocity with the OPERA detector in the CNGS beam"
Speaker: Masahiro Komatsu (OPERA Collaboration (Nagoya))
Date: Oct 20, 2011
12. "Lagrangian Floer theory on compact toric manifolds (Part 1)"
Speaker: Kaoru Ono (Hokkaido)
Date: Oct 24, 2011
13. "Lagrangian Floer theory on compact toric manifolds (Part 2)"
Speaker: Kaoru Ono (Hokkaido)
Date: Oct 24, 2011
14. "Electromagnetic duality from integrable spin chain"
Speaker: Peng Zhao (DAMTP, Cambridge)
Date: Oct 25, 2011
15. "A Matter Bounce By Means of Ghost Condensation"
Speaker: Chunshan Lin (IPMU)
Date: Oct 27, 2011
16. "On a classification of irreducible modulo p representations of a split p -adic group"
Speaker: Noriyuki Abe (Hokkaido)
Date: Oct 27, 2011
17. "The Origin of the Elements in the Universe"
Speaker: Johannes Andersen and Birgitta Nordstrom (The Niels Bohr Institute, Copenhagen)
Date: Oct 28, 2011
18. "Supermassive Black Holes and Galaxies"
Speaker: Scott Tremaine (Institute for Advanced Study, Princeton)
Date: Nov 02, 2011
19. "Seminar on Supermassive Black Holes"
Speaker: Scott Tremaine (Institute for Advanced Study, Princeton)
Date: Nov 04, 2011
20. "Towards the Next Generation of the CFHT: a dedicated, 10m, wide-field, highly-multiplexed spectroscopic facility for Mauna Kea"
Speaker: Alan McConnachie (NRC Herzberg Institute)
Date: Nov 07, 2011
21. "Two lectures on the extrasolar planet: observational and theoretical (1)"
Speaker: Scott Tremaine (Institute for Advanced Study, Princeton)
Date: Nov 07, 2011
22. "Two lectures on the extrasolar planet: observational and theoretical (2)"
Speaker: Scott Tremaine (Institute for Advanced Study, Princeton)
Date: Nov 07, 2011
23. "On Donaldson-Thomas theory for quivers with potentials (Part I)"
Speaker: Aleksandr Ivanovich Efimov (Steklov Mathematical Institute)
Date: Nov 07, 2011
24. "On Donaldson-Thomas theory for quivers with potentials (Part II)"
Speaker: Aleksandr Ivanovich Efimov (Steklov Mathematical Institute)
Date: Nov 07, 2011

Personnel Changes

IPMU Postdoctoral Fellow Masaomi Tanaka moved to The National Astronomical Observatory of Japan as an Assistant Professor. He was at IPMU from October 1, 2009 to November 30, 2011, first as a JSPS Postdoctoral Fellow until March 31, 2010.

IPMU Postdoctoral Fellow Kenneth Shackleton resigned IPMU at the expiration of his term, October 16, 2008 – October 15, 2011.