

## IPMU Public Lecture for the Citizens of Kashiwa

The IPMU Public Lecture 2008 “Is there an end to the universe?” was held at Media Hall on the University of Tokyo Kashiwa Campus on July 12. This was the first such event held by the IPMU since its startup on October 1 of last year. Initially we expected an attendance of 150, but since we received more than 300 requests the speaker, Director Murayama, made his presentation twice, in two sessions on the same day.

The lecture and subsequent Q&A session was followed by another long discussion session between



Photo 1: Audience listens intently to Director Murayama's lecture.

Photo 2: Audience members surround Director Murayama during the discussion session.

Murayama and the audience in which many questions were asked by audience members. This setup of directly talking with the Director helped members of the general public to better understand the role of the IPMU.

Many audience members answered the questionnaire favorably, saying that they were very satisfied and wanted to participate again in the next such opportunity.

## Ken'ichi Nomoto and International Colleagues Discover a New Type of Supernova

Ken'ichi Nomoto, a principal investigator at the IPMU, and his international colleagues announced that a supernova they discovered in January 2008 is a new type created by the explosion of a middle-sized star. They reached the conclusion that this supernova was the result of the explosion of a star approximately twenty-five times heavier than the sun based on the variation of its brightness and spectrum of its visible light. This is the first confirmation of a supernova created from the explosion of a middle-sized star such as this, although they have been predicted theoretically. The discovery was reported in the online edition of Science on July 24, 2008.

## Conference Report Focus Week: Second Workshop on LHC Phenomenology

The Focus Week: Second Workshop on LHC phenomenology was held over 5 days, from June 23 through 27, at the IPMU. It was organized by Mihoko Nojiri, a principal investigator at the IPMU, in the style of focus week, as was the first LHC workshop, which was held December 17 through 21, 2007. The purpose of this workshop was to focus on the Large Hadron Collider experiments (expected to start on September 10, 2008 at CERN in Geneva), bringing together efforts by researchers and theorists working on LHC physics, and to explore new physics beyond the standard model of particle physics.

Following the success of the first workshop, the number of presentations per a day was limited to only 2 or 3, and the rest of time was made available for discussion.



### Future Conferences Focus Week: Quantum Black Hole

Focus week: Quantum Black Hole will be held at Media Hall on the University of Tokyo Kashiwa Campus from September 12 through 16. This workshop aims to strengthen our understanding of the quantum black hole and to develop new directions and new mathematics.

The following speakers have been invited: from overseas Atish Dabholkar (University of Paris 6), Veronika Hubeny (University of Durham), Mukund Ramgamani (University of Durham), Norihiro Iizuka (KITP), Daniel Kabat (Columbia University), Gautam Mandel (TIFR), and Sunil Mukhi (TIFR); and from Japan, Satoshi Iso (KEK), Makoto Natsuume (KEK), Jun Nishimura (KEK), Yasuhiro Sekino (OIQP), Koji Hashimoto (RIKEN), Yoshifumi Hyakutake (Osaka University), Wei Li (IPMU), and Tadashi Takayanagi (IPMU).

Further details can be found on the IPMU website.

### —Workshop: Micro-local Analysis of Symplectic Manifolds

The Workshop on Micro-local Analysis of Symplectic Manifolds will be held from September 16 through 18 at the FS Hall in the Frontier Sciences, Environmental Studies

Building on the University of Tokyo Kashiwa Campus. The workshop is being organized by Kyoji Saito, a principal investigator at the IPMU. In mathematics, a phenomenon called deformation quantization is a sheaf of rings on the symplectic manifold, and means of quantifying it using the notion Frobenius action are being developed.

The workshop will feature a keynote lecture by Masaki Kashiwara on basic theory and its application to representation theory. The organizers are currently requesting other experts for presentations on recent developments in their research. The content of the talks is to be above student level.

### Tea Time

The IPMU hosts tea time every day from 3 o'clock in the afternoon. Scientists working in physics, astronomy, and mathematics gather together over tea and cookies for communication across research fields.



Sharing a relaxed time in this manner is a good way for scientists from different fields to keep up with recent developments in various research areas. The participants also enjoy conversing about their home countries (there are many researchers from overseas at IPMU) and exchange information about life in Japan.

### IPMU Website

The IPMU website was recently renewed (<http://www.ipmu.jp>). In addition to previously available information such as an introduction to the IPMU and various announcements, much more information for visitors and employees and about living in Kashiwa has been added. You can find information about getting visas, finding hotels, and other useful information for living in Japan. Those who come to the IPMU to conduct research can find useful information about such matters as acquiring research grants and using the library in addition to information about living in Kashiwa (you need a password to access this page). The website is one of several ways the IPMU supports research activities.

### Japanese Lessons

The IPMU offers free Japanese

language classes for two hours a day for a total of 40 hours for scientists newly arrived from overseas. The lessons are intended to teach the bare minimum of Japanese conversation skills required for day-to-day living in Japan. Time is set aside in the final class for speeches in Japanese. We also offer more advanced classes. Some people continue on and are working hard to master Japanese.



## Seminars

The IPMU hosts regular seminars every Wednesday at 3:30 and invites speakers from around the world. Information is posted on the IPMU website (<http://ipmu.jp/seminars>). One of the purposes of these regular seminars is to encourage researchers from different fields to understand each other's specialties. Separate seminars are also held for each research field. At present, seminars on particle physics and astrophysics are held every Thursday at 1:30pm, and on mathematics and mathematical physics

every Thursday at 3:30pm. All seminars are in English. Mathematics seminars are also held at the Komaba Campus.

The following is a list of seminars that have been held since June 18, 2008.

### —IPMU Seminars

1. "Crossing the Wall: overcoming an Obstruction in Quantum Field Theory and String Theory"  
Speaker: Andy Neitzke  
Date: 18 June, 2008
2. "BPS Wall-crossing and Hyperkahler Geometry"  
Speaker: Andy Neitzke  
Date: 19 June, 2008
3. "Planar AdS/CFT wrapping it up"  
Speaker: Sakura Schafer-Nameki  
Date: 19 June, 2008
4. "IPMU, Mathematics, Physics, and Me"  
Speaker: Hitoshi Murayama (IPMU)  
Date: 20 June, 2008
5. "The Muon  $g-2$  and the Bounds on the Higgs Boson Mass"  
Speaker: Massimo Passera (INFN)  
Date: 24 June, 2008
6. "Spin Foam Models of Quantum Gravity"  
Speaker: J. Manuel Garcia-Islas (National Autonomous University of Mexico)  
Date: 25 June, 2008
7. "TBA"  
Speaker: Andrei Mikhailov  
Date: 25-26 June, 2008
8. "Weak Scale Gravitino Dark Matter"  
Speaker: Shigeki Matsumoto (University of Toyama)  
Date: 26 June, 2008
9. "Galaxy Formation through Cosmic Time Using Cosmological Hydrodynamic Simulations: Successes and Current Issues"  
Speaker: Kentaro Nagamine (U. Nevada)  
Date: 2 July, 2008
10. "On Multiplier Ideal Sheaves on Toric Fano Manifolds"  
Speaker: Yuji Sano  
Date: 3 July, 2008
11. "Neutrino Oscillations in Non-spherical Supernova"  
Speaker: Shiou Kawagoe (Tokyo)  
Date: 10 July, 2008
12. "Drived Hall Algebra I, II, III"  
Speaker: Jie Xiao, Fan Xu (Tsinghua University)  
Date: 14, 18, and 21, 2008
13. "AdS/CFT Correspondence and Integrable Systems"  
Speaker: Kazuhiro Sakai (Keio)  
Date: 16 July, 2008
14. "Cosmology in Warped Extra Dimensions"  
Speaker: Kenji Kadota (Minnesota)  
Date: 17 July, 2008
15. "Partition Functions for Non-commutative Lattices"

- Speaker: Kyoji Saito (IPMU)  
Date: 17 July, 2008
16. "Testing Inflation: Gravitational Waves, Consistency Conditions, and Bootstrap Relations"  
Speaker: Latham Boyle (CITA)  
Date: 22 July, 2008
17. "Joint Seminars on Cosmology and Gravitation"  
Speaker: Latham Boyle (CITA)  
Date: 23 July, 2008
18. "Lie Algebras Associated with Derived Categories I, II, III"  
Speaker: Jie Xiao, Fan Xu (Tsinghua University)  
Date: 24, 28 and 29, 2008
19. "Quasars from  $z=0$  to  $z=6$ : Demographics and Clustering as Clues to Their Physical Nature"  
Speaker: Michael Strauss (Princeton University)  
Date: 24 July, 2008
20. "Symmetries and the Riemann Hypothesis"  
Speaker: Lin Weng (Kyushu University)  
Date: 28 July, 2008
21. "On a Drinfeld Modular Analogue of Beilinson's Conjecture"  
Speaker: Satoshi Kondo (IPMU)  
Date: 30 July, 2008
22. "Vertex Operator Algebra with C2-finite Conditions and Logarithmic Conformal Field Theory"  
Speaker: Akihiro Tsuchiya (IPMU)  
Date: 31 July, 2008
23. "Counting Invariants of Perverse Coherent Systems on CY 3-folds and Their Wall-crossings"  
Speaker: Kentaro Nagao (Kyoto University)  
Date: 4 August, 2008
24. "Introduction to Deligne-Lusztig theory"  
Speaker: Shushi Harashita (IPMU)  
Date: 11 August, 2008
25. "One-Loop Riemann Surfaces in Schnabl Gauge"  
Speaker: Michael Kiermaier (MIT)  
Date: 13 August, 2008
26. "Applications of Wide and Deep Multi-waveband Imaging in the Extragalactic Astronomy: Suprime-Cam to HSC"  
Speaker: Hisanori Furusawa (NAOJ)  
Date: 18 August, 2008
27. "Where is the Information in Cluster Lenses?"  
Speaker: David M. Goldberg (Drexel University)  
Date: 21 August, 2008
28. "Mass and Spin at LHC"  
Speaker: Yeong-Gyun Kim (KAIST)  
Date: 22 August, 2008
29. "A Singularity Problem with  $f(R)$  Dark Energy"  
Speaker: Andrei Frolov (Simon Fraser University)  
Date: 28 August, 2008

#### —IPMU Komaba Seminars

1. "Quantum Topological Invariants and Black Hole Entropy"  
Speaker: J. Manuel Garcia-Islas (National Autonomous University of Mexico)  
Date: 30 June, 2008
2. "Symmetries and the Riemann Hypothesis"  
Speaker: Lin Weng (Kyushu University)  
Date: 28 July, 2008

#### Personnel Changes

Yasuhiro Shimizu, IPMU distinguished postdoctoral fellow, has taken a position as an assistant professor at the Tohoku University International Advanced Research and Education Organization, Institute for International Advanced Interdisciplinary Research. He was with the IPMU from April 1 to June 30, 2008. We wish him good luck in his new endeavors.

#### Corrections

IPMU News vol.2 News (p.22) "by the German Prime Minister" should be corrected to "by the German President".