

AKPA Newsletter

재미 한인 물리학자 협회

Volume 27, Number 3

December, 2008

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The current and past AKPA news can be found in the AKPA website: <http://www.akpa.org/>.

1. OYRA Awards

Nominations for the Outstanding Young Researcher Award (OYRA) are being accepted. Please spread the words to anyone who is deemed to be a good candidate or who might know such candidates. The announcement is below.

Invitation to Nominate the 2009 AKPA Outstanding Young Researcher Award (OYRA)

Purpose

To recognize and promote excellence in research by outstanding young ethnic Korean physicists in North America who are working at research universities/institutions, or at industrial/government laboratories in North America. The OYRA has been awarded annually by the Association of Korean Physicists in America (AKPA) since 1994.

Qualification and Nomination

Candidates are limited to those who received the doctoral degree after January 1, 2003, and are to be nominated by the Chair or Head of the Department where they are employed or by the candidate's former thesis advisor in a letter detailing the importance and impact of the candidate's work. Supporting documents should include the candidate's curriculum vitae with representative publications and three letters of recommendation. (Usually, OYRA is limited to young researchers within five years after his/her Ph. D., but the time limit is extended one year for this time because the award was skipped last year. Exceptions to the rule of candidates being within 6-

years of his/her Ph. D. degree can be allowed for extenuating circumstances such as military services and any extended medical leaves. In such cases, such interruptions will not count toward the 6-year rule.)

Nomination and Deadline

December 15, 2008 for nominations and December 31, 2008 for supporting documents. The awardee will be selected by the Awards Committee. Nominations and supporting documents are to be sent electronically, preferably in PSF form, to Professor Yong Wook Kim, Chair, AKPA Awards Committee at ywk0@lehigh.edu and a copy to Dr. Taeil Bai, President, AKPA at bai@sun.stanford.edu.

Presentation

The award of \$1,500 with a plaque will be presented at the AKPA annual meeting, which will be held in conjunction with the American Physical Society March Meeting on March 16-20, Pittsburgh, PA. The exact location and time of the annual meeting will be announced later.

2. Public Lecture in San Diego



On August 16, 2008 Dr. Bai delivered a public lecture on “Life in the Universe.” The lecture began at 7:30 p.m. at 1201 Evergreen Rd., San Diego and lasted until 9:00 p.m. Dr. Bai discussed the so-called “fine tuning” of the fundamental constants of physics to make life possible in the Universe. The Universe would be without any life, if the value of any one of fundamental constants were different from the actual value only slightly. Scholars have noticed this peculiar characteristics of the Universe, but most lay people are not aware of it. (Please see my articles entitled “Fine Tuning of the Universe”

and “By Accident or Design” at <http://sun.stanford.edu/~bai/bai.html>.)

He also discussed possibility of extra-terrestrial life, and introduced NASA’s efforts to find earth-like planets outside the Solar System.

3. Election of Dr. Ji as the President of KSEA

In April Dr. Cheung Ryong Ji, physics professor at North Carolina State University, was elected as the 38th President of KSEA (Korean Scientists and Engineers in America). He is also the President-elect of AKPA, so he is going to be very busy next year. Please be ready to help him on AKPA business.

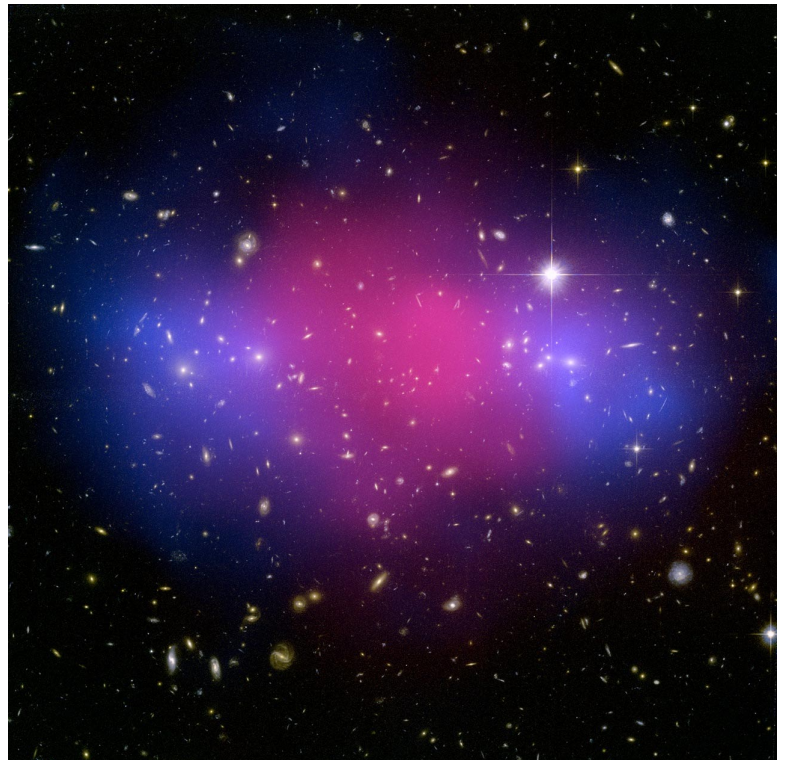
4. Light Shed on Dark Matter

It is sobering and humbling to recognize that the ordinary matter that physicists have studied all along constitutes only 4% of the total energy of the Universe. According to the current understanding, dark matter, which does not radiate electromagnetic waves, constitutes about 23%, and even more mysterious dark energy constitutes about 73%. Here the word “dark” does not imply any evil nature as in “dark force” in Star Wars series, but it signifies our ignorance.

The existence of dark matter was known to astronomers for a long time. Fritz Zwicky (1937) discovered that the total mass of the Virgo Cluster of galaxies estimated from star lights was not large enough to hold constituent galaxies gravitationally in cosmological time scales. According to him, galaxies in the Virgo Cluster would have been dispersed long ago unless there is more matter. Then, in the late 1960s and the early 1970s, Vera Rubin found that the speeds of stars at the outskirts of spiral galaxies do not decrease as the distance from the center of the galaxy increases. The rotational speed of stars in the outskirts of a galaxy is expected to decrease with increasing distance from the center, following the Kepler’s law, if the matter distribution follows the star distribution. Therefore, there must be more matter in the outskirts of a spiral galaxy.

In recent years, gravitational lensing has been used for estimating the total masses of galaxy clusters. Images of far-away galaxies lying behind a nearby cluster of galaxies are distorted by gravitational lensing, and from the degree of image distortions one can calculate the total mass of the fore-ground cluster of galaxies. The total mass thus calculated is typically 10 times larger than the mass calculated from star lights.

Recently, Randall et al. (2008) published a very interesting picture showing the distribution of dark matter in the vicinity of two clusters of galaxies colliding each other. This picture is a composite picture made of three components. Galaxies and stars were observed by the Hubble Space Telescope in visible lights, and the red color image depicts a map of the X-ray intensity, due to hot gases, observed by the Chandra Space Telescope, and the purple image shows the distribution of dark matter estimated from gravitational lensing. Dark matter is left behind colliding clusters because dark matter only interacts with ordinary matter.



References

- Randall, S. W., et al. 2008, ApJ 679, 1173
Zwicky, F. 1937, ApJ 86, 217

5. National Project for World-Class Universities

Building world-class universities in Korea became a national project accompanying with money and effort. One way to do so is to recruit outstanding foreign scientists to stay in Korea and collaborate with Korean scientists for a few years. The application deadline for this year has passed, but please find a pdf document in the website www.kosef.re.kr/english_new/programs/programs_06.html, if you are interested in this project for the future.

6. Internal Auditor's Report for the Fiscal Year Ending in June 2007 (FY: 2006-2007)

Instead of the audit report, the last AKPA Newsletter contained the financial report. Here is the audit report (in the next page).

**AKPA Newsletter is published by the Association of Korean Physicists in America.
Publisher and Editor: Dr. Taeil Bai, President
Associate Editor: Dr. Youngho Seo, Communications Officer**

Internal Audit Report
July 07, 2007
Association of Korean Physicists in America (AKPA)

Objective and Scope:

- This audit was conducted to examine and evaluate whether the organization exercises its financial and organizational processes adequately and effectively as required by the by-laws of the organization.
- Reviewed are the following elements of the financial activity of the organization for fiscal year 2006-2007: accounting, reporting, purchasing, bank statements, copies of checks issued and received, and receipts.

Audit Opinion:

- Accounting is accurate and all the records and receipts are well organized and preserved.
- The organization maintains a healthy balance \$6,858.91 as of June 20, 2007.

<u>Balance from previous year</u>	<u>\$6,210.22</u>
Income from donation	\$3,672.30
Income from membership	\$2,600.00
<u>Income from others</u>	<u>\$ 838.89</u>
<u>Total expenditure</u>	<u>\$6,462.50</u>
Balance	\$6,858.91

Suggestions for Improvements:

It is notable that most of the membership income (\$2,400) was generated through the life-time membership. Since year 2006 - 2007 was the first year of the life-time membership drive, one should expect that the membership income would decrease in following years.

Corrective Action:

Nothing to report.

Auditor:

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