CONFERENCE REPORT

54th Meeting of Nobel Prize Winners in Lindau 18th Meeting of Laureates in Physics 27 June to 2 July, 2004

The Lindau Meetings of Nobel Laureates has now acquired a truly international character: 630 students from 25 countries came this year. China, Korea, Malayasia sent students for the first time. This year 18 Nobel Laureates came to Lindau. Among them Riccardo Giacconi and Masatoshi Koshiba were in Lindau for the first time. The support of large number of foundations and sponsors has secured the continuity of these meetings. With a total of about 1000 participants filling up the Inselhalle (where the lectures were delivered) completely, I thought the size of the meeting cannot increase much more. The entire programme was efficiently organised by the Kuratorium, headed by the graceful Countess Sonja Bernadotte.

The Indian contingent, consisting of 18 students/ researchers (11 female, 7 male), was selected by the Ministry of Science & Technology, New Delhi. After the meeting in Lindau, the Indian students went on to visit for a week to different universities and institutes in Germany before returning to India. For comparison we can quote the number of students from a few other countries: U.S.A 60, China 25, England 13, Japan 10, Pakistan 8. In addition, there were a large number of German and foreign scholars who were currently enrolled at German universities.

With the opening ceremony shifted to Sunday afternoon, time was gained for the academic part of the meeting over the next four days. A total of 16 lectures, each lasting half an hour, were delivered. As usual the lectures were masterpieces of scientific presentation starting with an introduction they were packed with uptodate and advanced information illustrated by slides and videos. After the lecture sessions members of the press could ask the speakers questions about their talks or related matters. In addition to the lectures there were Round Table Discussions on two days on *Astrophysics* and *Fundamental and Applied Physics*. Nobel laureates sat on the podium and discussed questions from the chair as well as from the floor. On three afternoons the laureates met students with admission cards for informal discussion.

The first topic of discussion, Astrophysics, holds a special attraction even for non-physicists. This is evident from the large sale of books by Stephen Hawking which cannot be understood completely by laymen. Astrophysics deals with the fundamental questions about the origin and structure of the universe. It was repeatedly pointed out that the mass of normal, observable matter in the universe was only 5-10% of the total. The rest was supposed to be some kind of dark matter or dark energy.

The daily programme is given below.

Monday 28 June 2004

Round Table Discussion: Astrophysics: Riccardo Giacconi, Masatoshi Koshiba, Arno Penzias, Geradus 'tHooft. Chair: Lars Bergström

Klaus von Klitzing (1985) Stuttgart, Germany: **Spin Phenomena in the Electronic Transport of Semiconductor Quantum Structures.**

Walter Kohn (Chemistry 1998) Santa Barbara, U.S.A.: **New Perspectives on Van der Waals Interactions Between Systems of Arbitrary Size, Shape and Atomic Composition.**

Herbert Kroemer (2000) Santa Barbara, U.S.A.: **Negative Optical Refraction.**

Tuesday 29 June 2004

Douglas Osheroff (1996) Stanford, U.S.A.: **Understanding the Columbia Shuttle Accident**.

Leo Esaki (1973) Tokyo, Japan: **The Birth of a Superlattice and its Evolution**.

Arno Penzias (1978) Menlo Park, U.S.A.: **A Classical View of Cosmology**.

Ivar Giaever (1973) Troy, U.S.A.: **How to start a High Tech Business**.

K. Alex Müller (1987) Zürich, Switzerland: **Some Remarks on the Symmetry of the Superconducting Wavefunction in the Cuprates**.

Robert Huber (Chemistry 1988) Martinsried, Germany: **Aerobic and Anaerobic Life on carbon Monoxide (CO)**.

Wednesday 30 June 2004

Nicolaas Bloembergen (1981) Tucson, U.S.A.: **Lasers in Peace and War**.

Riccardo Giacconi (2002) Washington, U.S.A.: **X-ray Astronomy**.

Masatoshi Koshiba (2002) Tokyo, Japan: **The Birth of Neutrino Astrophysics**.

Robert Richardson (1996) Ithaca, U.S.A.: **Pseudo-Science, Marvelous Gadgets and Public Policy**.

Brian Josephson (1973) Cambridge, U.K.: **Fact and Fantasy in Science**.

Thursday 1 July 2004

Round Table Discussion: Fundamental and Applied Physics: Ivar Giaever, Herbert Kroemer, Douglas Osheroff, K.A.Müller, Martinus Veltman.

Chair: Anders Bárány.

Geradus 'tHooft (1999) Utrecht, NL: Supertheories.

Martinus Veltman (1999) Bilthoven, NL: The Development of Particle Physics.

The lectures and the Round Table Discusions which covered a wide range of topics, pointed out the still unsolved problems of physics and astronomy, such as the detection of Higgs boson for completion of the standard model of elementary particles, superstring theories as the ultimate theory, quantization of Einstein's General Theory of Relativity, Dark Matter and Dark Energy needed to explain observed acceleration of the universe. 'tHooft said one needed years of study of mathematical physics in order to understand the string theory although he admitted that even with this knowledge one would not, like him, understand everything. It was also mentioned that a sharp distinction should not be made between pure and applied science; one often leads to the other. Opposing views were expressed on benefits of scepticism. While Richardson recommended it to fight pseudo science, Josephson said we should not throw away the baby with the bath water when facing strange phenomena e.g. on powers of mind, cold fusion etc. It was clear that physicists could do their work successfully without caring about philosophy or philosophy of science as currently practised.

As on all previous years there was an evening party on Monday and a boat trip to the Island of Mainau on Friday. Both the events gave an excellent opportunity for the students to mix freely with the Nobel Laureates.

The Next meeting in Lindau will be held from 26 June to 1 July 2005, it was announced that to commemorate a century after Einstein's important discoveries in 1905, the meeting will be interdisciplinary in nature covering all the three scientific disciplines. The following websites provide information on Nobel Prize winners and Lindau meetings:

www. lindau-nobel.de

www.nobelprize. org

www.vega.org.uk

It was planned to hold a meeting of Nobel Laureates in Economics for the first time in Lindau from 1 to 4 September, 2004.

Author (middle) listening to Dr. Arno Penzias.

Sitting (left to right) Giacconi, Esaki, Kroemer, Osheroff, Müller. Kohn.
Standing (left to right) Giaever, Richardson, Arber, Bloembergen,
Countess Sonja Bernadotte,'tHooft, von Klitzing, Josephson.

(Photos Courtesy: Annette Jordan, Niederstaufen)

Reported by:

Dr. Saurabh Sanatani,
Vienna, 7 July, 2004