1993 Amaldi International Prize

for a High School Physics Textbook **CALL FOR NOMINATIONS**

The Edoardo Amaldi Foundation, with the joint sponsorship of the European Physical Society (EPS), seeks nominations for an ECU 20 000 prize in memory of contributions by Edoardo Amaldi and his wife Ginestra to physics and science teaching in high schools. The prize will be awarded for the first printing of a high school textbook in physics (14- to 18-year old students) published between 1 January 1987 and 30 September 1993. The author, who must be European and working in Europe in a country whose national society is a member of EPS, will receive ECU 16 000; the publisher receives the balance. Innovation in high-school teaching is a prime consideration.

Interested authors or publishers (with an author's consent) are invited to apply by sending, by **30 September 1993**, two copies of the volume to: Amaldi International Prize Secretariat, Via Mazzini, 62, I-29100 Piacenza. Applicants will subsequently be asked to send five additional copies to Members of the Jury nominated jointly by the Foundation and EPS.

The Jury can decide not to award the Prize, which cannot be shared. It will be handed over in Piacenza in Spring 1994 and the textbook would be expected to carry a special wrapper bearing an inscription and the Prize's logo.

Venjamin Chebotaev

Venjamin Chebotaev died of a heart attack on 2 September 1992 at the age of 57. He was on a short visit to Tucson, Arizona, while spending a year in Munich on an Alexander von Humboldt award. Laser spectroscopists were deeply shocked for they lost one of the most talented colleagues, who was not only collaborative and inspiring but also an outstanding teacher and a warm-hearted and lively person.

Venjamin was born in Knibishev located near the mid-point of the Volga River. He inherited the spontaneous openness of his countrymen. World War II took him to Novosibirsk where he graduated from the Institute of Electronics in 1960, and received his doctoral degree in physics and mathematics in 1972. He then set about building up a laser spectroscopy group at the Institute of Thermophysics in Akademgorodok-Novosibirsk, eventually becoming the Vice-Director. He was named only a year before his death as the Director of the Institute of Laser Physics which had been specially created for him.

Chebotaev's achievements over the years can be viewed as a string of precious pearls of ever increasing beauty. The hollow cathode laser developed by him in 1965 was the first laser to be operated in Siberia. Following Lamb's theory of non-linear effects in the absorption of gas lasers, Chebotaev (simultaneously with Lee and Scolnick in the USA) demonstrated intercativity and later extracavity Doppler-free resonances in different gases. This was a cornerstone in the development of Doppler-free saturation spectroscopy, later applied worldwide to study the properties of atoms and molecules with the highest precision. At the same time Chebotaev observed optical hysteresis and bistability using nonlinear absorption (the latter becoming important in optical computers and storage devices).

In 1970, Chebotaev showed that two-photon absorption was a new and very powerful technique for Doppler-free spectroscopy. It turned out to be one of the most important methods for ultra-high precision, particularly in hydrogenic systems. He also measured the tiny recoil effect in the absorption of photons by atoms. Following Ramsey's approach for separated oscillatory field resonances, Chebotaev was able to transfer the idea to separated coherent optical fields, and detected signals in two-and three-level systems, seeing two-photon resonances and spatial optical echoes.

Step-by-step, Chebotaev's laboratory became engaged in superhigh-resolution spectroscopy and its application to fundamental problems. The rich harvest of the 1980's included the observation of the temperature red shift due to the second-order Doppler effect, the direct observation of resonance narrowing by means of very cold particles, and the construction of frequency standards with excellent short- (10^{-16} s) and long-term (10^{-14} s) stabilities. Finally, as a coronation, he developed an optical clock for a time standard based on frequency measurements in the infrared and optical ranges.

Chebotaev's feeling for future developments is impressively demonstrated by his theoretical study of cold ions in a trap; he realised the possibility of Wigner crystallization long before the effect was observed. One should also mention Chebotaev's interest in applications of lasers in fields ranging from metrology and astrophysics to material sciences and medicine. For instance, the first attempt to correct the focal length of the eye by the Fjodorov method of cornea ablation with a laser knife was prepared under his careful guidance.

Venjamin Chebotaev created a school of talented scholars who matured to scientific independence in an inspiring and open atmosphere: it is no wonder scientists from all over the world visited. The Vavilov conferences held in Akademgorodok are remembered as the finest meetings in laser science; the annual German-Soviet Laser Seminar from 1969 to the late-1980's was strongly supported by him. He initiated contacts between younger scientists in both countries, something which was not trivial at the time. The visibility of laser physics and spectroscopy was greatly enhanced by his monograph *Nonlinear Laser Spectroscopy*, together with V.L. Letokhov, that remains today a classic textbook.

Chebotaev received many awards and honours, notably the 1978 Lenin Prize and the 1984 Charles Hard Townes Prize; he was a fellow of the Optical Society of America. A remarkable man, full of new ideas and inspiring his colleagues by open discussion, he possessed the sense and feeling to aim for discoveries of importance. He was a gifted teacher, guiding his scholars and shielding them against daily mishaps while all the time radiating his joy of life. His early loss is a greatly sorrowing: with Venjamin's wife Tanja and his daughter Marina, we share our deep sympathy.

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Heidelberg

ERRATA

In the item "LEST Moves Ahead" published last December [*Europhys. News* **23** (1992) 206] the Editor referred to a meeting in 1991 of OECD ministers. This should have been the Experts Meeting of the OECD's Megascience Forum (see page 48) held in October 1992 at which LEST was the only ground-based solar project considered. In the LEST article on page 203, the Editor in converting acronym's referred to the National Solar Observatory's 1.5 m telescope on Kitt Peak as the Big Bear Solar Telescope. The Big Bear Solar Observatory is in fact a 0.4 m multi-aperture telescope located at Big Bear Lake.