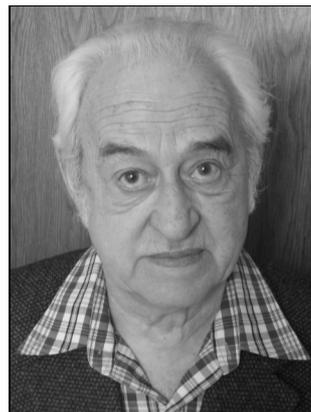


OCTAV GHEORGHIU TURNS 80

August 1972. As a fresh graduate with the appointment letter in my pocket, I reported at the Bucharest Institute of Physics, Plasma Laboratory. I noticed another man in the office besides the head laboratory – a stern gray-haired man. That's how I met Octav Gheorghiu. I remember my first days and months at the office. We sat at a long table, opposite to each other. Every morning he used to assign me several chapters from this or that book, which I had to read. At the end of the day, he came up and asked what I'd made of it. My colleague Liviu Giurgiu had the same treatment. Back then, neither of us was happy with this work style, but now we are both grateful to him. It was him who got us acquainted with the time-frequency atomic standards, especially the Hydrogen Maser. In fact, he fathered the Romanian Maser and pioneered this beautiful vast topical area.



Octav Gheorghiu was born in Iași, on March 24, 1924. His father, Constantin Gheorghiu, taught Organic Chemistry at the University of Iași. His mother, Margareta Gheorghiu, was a high-school teacher of Physics and Chemistry. He finished secondary education in his native town and then moved to Bucharest to study at the Polytechnic Institute. After graduation, he got a job at the Ministry of Posts and Telecommunications. He joined the Bucharest Institute of Physics as a scientific researcher in 1957. In 1969, the Polytechnic Institute awarded him a PhD degree in engineering.

Along a lifetime dedicated to science, he has chiefly focused on:

– **Propagation and antennas.** While still at the Telecommunications Ministry, he systematically measured the electromagnetic field across Romania in order to determine the best way to supply the broadcasting stations. He supervised the installation of the broadcasting station in Timișoara (1951). Then he devised the picture transmitter and aerial of the Experimental Television Station in Bucharest, for which he was awarded the Labor Order 3rd Class, in 1956.

– **Resonators and Transmission Lines.** He studied the theory of the transmission lines with losses. His results were reported in: *Rev. Roum. Phys.* (9, 3, p. 305, 1964, 12, 4, p. 375, 1967, 16, 9, p. 999, 1971), and *Stud. Cerc. Fiz.* (24, 3, p. 291, 1972, 40, 9, p. 713, 1988).

– **Herzian Spectroscopy.** Part of his work was aimed at determining electric and magnetic susceptibility by perturbing a resonator with samples of substance (*Rev. Roum. Phys.* 11, 5, p. 409, 1966).

– **Negative Ions.** He also worked with Academician Th. V. Ionescu, his friend since childhood, whom he also deeply respected for his exceptional merit. Together they carried out systematic studies to determine the resonant frequencies of negative molecular ions of Hydrogen and Oxygen. Their joint researches materialized in many valuable papers published in C. R. Acad. Sci. Paris (**245**, p. 898, 957, **246**, pp. 2250, 3598, 1958, **250**, 2182 p. 1960, **252**, p. 870, 1961) and Rev. Roum. Phys. (**4**, 2, p. 113, 1959).

– **Plasma diagnosis.** He worked out several methods based on perturbing electromagnetic Resonators at frequencies ranging from 39 to 200 MHz for determining electronic density in glow discharges. His most relevant papers on this topic appeared in Rev. Roum. Phys. (**14**, 9, p. 86, 1969), Conf. on Gas Discharges, 1970, CON IEE Con Publ, 70, p. 152 C. R. Acad.Sci. Paris (**270**, 880, 1970) and Int. J. of Electronics (**29**, p. 335, 1970).

– **Atomic Frequency Standards.** Attracted to novelty and sensing the growing importance of the Atomic Frequency Standards he moved on this area of research in 1972. A one-year research stage at the prominent Laboratory de L’Horloge Atomique at Orsay, France (head Dr. Claude Audoin), gave him additional insight into the field. On his return, he and his team were the first to obtain a “maser effect” in Romania in August 1974 (Rev. Roum. Phys. **29**, p. 305, 1975).

To optimize maser performances he systematically studied the radio-frequency discharge in Hydrogen that supplied atomic Hydrogen for the Maser (Int. J. of Electronics **39**, p. 329, 1975, Rev. Roum. Phys. 24, p. 317, 1979, C. R. Acad., Sci. Paris 295, p. 131, 1982, Rom. Rep. in Phys. 53, p. 265, 2001, Proc. 10th Int. Symp., on Molecular Beams, VII, Cannes, France, 1985).

To improve Hydrogen Maser screening, he developed a type of screens that reduced noise in the area of atom-microwave field interaction to less than 10^{-8} T. During the 1990s, he became interested in the development of a passive Hydrogen Maser (16th National TDF Conf. Ayvalik, Turkey, National Phys. Conf., Baia Mare, 1995), more rugged and easier to realize compared to the active devices.

Nine Hydrogen Masers were built as a result of his tireless efforts, which turned Romania into the only Eastern European country involved in Maser design and construction, earlier than the 1990s (Rev. Rom. Phys., 20, 3, p. 305, 1975, J. Phys., Paris 24, Supp. 12, C8, p. 519, 1981, Metrologia Aplicata 24, p. 25, 1977, Preprint LOP, 23, 1981, Topics in Astrophysics, Astronomy and Space Science I, p. 77, 1985, Proc. 4th Symp. on Frequency Standards and Metrology, Ancona, Italy, p. 414, 1988, General Conf. of Balkan Physical Union, Izmir, Turkey, 1994, 9th European Frequency Time Forum, Besançon, France, Proc. P. 397, 1995).

His constant concern for improving time scales materialized in the realization of 18 hour signal receivers which are still operating in the Romanian seismological network.

In recognition of his prominent results, he received the Romanian Academy’s “Dragomir Hurmuzescu” Award in 1969.

A dedicated researcher and a born teacher, he played a decisive role in training several generations of PhDs in Physics. In the period from 1970 to 1991, he guided the preparation of six PhD theses. Since 1991 he has been a supervisor of PhD studies in Optics and Spectroscopy.

His great capacity for work along with his unaltered passion for science have impelled him to go ahead with his researches well beyond the time of his retirement. Although the current laws bar him from being hired as an advising professor, he still comes to the laboratory every day, imparting his advice and taking a concrete part in our research work. The Romanian physical school in Atomic Frequency Standards has continued in Dr. Gheorghiu's footsteps, cooperating with major French and Swiss Laboratories in the most advanced researches in the field.

As a consequence, dozens of papers resulted, which were presented at national and international conferences or published in prestigious scientific journals.

On his 80th birthday, we wish Prof. Octav Gheorghiu a perfect health and excellent work capacity. Many happy returns of the day, Prof. Octav Gheorghiu.

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