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On the occasion of the 70th anniversary

IL'YA IZRAILEVICH BLEKHMAN

Member of Academy of Engineering Sciences Sankt Petersburg, Russia

Invited lecturer at YUCTAM Vranjačka Banja '97



Il'ya Izrailevich Blekhman, was born on November 29, 1928 in Harkhov. He graduated in 1951 at Leningrad's polytechnique Institute, Faculty of Mechanics and Mathematics, and immediately became a research engineer in area of technical mechanics at "MEHANOBR". In 1962 he defended the doctoral thesis. His university professors were *G.Yu Dzhanlidze, A.F. Ioffe, A.I. Lur'e, I.G. Malkin, S.N. Numerov, V.I. Smirnov, G.M. Fih tengol's*.

Full Professor and Doctor of Physical-Mathematical Sciences (the highest degree in Russia), Iliya I. Blekhman heads the Fundamental Research Department of the Research and Design Institute of Mechanical Treatment of Mineral Products (Mekhanobr) and the Laboratory of Vibrational Mechanics of the Institute of Problems of Mechanical Engineering of the Academy of Sciences of Russia in St. Petersburg. He is Full Member of the Russian and International Engineering Academies, a Member of the National Committee of Theoretical and Applied Mechanics, and he also participates in publishing the Russian journal Applied Mathematics and Mechanics (which is translated into English).

Professor I. Blekhman is among the top experts in the fields of applied mathematics and mechanics, in nonlinear oscillation theory, in dynamics of machines and in vibrational engineering. The theoretic and technical works of Prof. I. Blekhman are devoted to problems of energy- and resource-saving in the field of mining and processing the mineral resources as well as in creating the new machines for these purposes.

Together with his colleagues he discovered a phenomenon of appearance of the gravitational gas-lift stream. This phenomenon must form the basis of the technology which will enable mastering practically inexhaustible resources of energy and of raw materials of the world ocean. I. Blekhman is the founder of the theory of vibrational transportation and of the theory of the synchronization of revolving solids, he discovered and investigated the phenomenon of self-synchronization of unbalanced rotors. He has developed general approaches to the investigation of the effect of vibration on nonlinear mechanical systems - approaches now termed Vibrational Mechanics and Vibrational Rheology. He is the author of monographs (see the list below), and of more than 140 papers in the leading Russian periodicals. He also holds a number of patented pioneering inventions, licences of which have been purchased by top companies in the USA, Japan,

Bulgaria and Iran. He is also the author and scientific editor of Vol. II of the reference publication *Oscillations of nonlinear mechanical systems* entitled *Vibrations in technology* (Mashinostroyeniye Press, Moscow 1978-1981).

Professor Blekhman delivered lectures at the Massachusetts Inst. of Technology, Worcester Polytechnic Inst. (USA), University of Bath (UK), Technical Universities in Brazil, Germany, Italy, Japan, Poland, Denmark, Netherlands.

Professor Bekhman is a distinguished scientific figure of exquisite creative energy and inspired enthusiasm, as well as a scientist-engineer who contributed to scientific and engineer heritage. He is still active in scientific world activities. He is world known for his contributions in the theory of nonlinear oscillations, applied mechanics and theory of vibrational processes in machines as well in vibroreology and theory of synchronization.

On behalf of the Chair of the Faculty of Mechanical Engineering University of Niš we wish him many years of healthy life and a lot of successful and fruitful work.

MONOGRAPHS BY I. I. BLEKHMAN

1. *Vibrational Transportation* (with G.Yu.Dzhanelidze). Nauka Press, Moscow 1964.
2. *Synchronization of Dynamic Systems*. Nauka Press, Moscow 1971.
3. *Applied Mathematics: its Object, Logic, Peculiarities of Approaches* (with A.D.Myshkis and Ya.G.Panovko). Naukova Dumka Press, Kiev 1976.
4. *Synchronization in Nature and Technology*. Nauka Press, Moscow 1981. (English translation by ASME Press, USA, N.Y., 1988).
5. *Mechanics and Applied Mathematics* (with Myshkis and Ya.G.Panovko). Nauka Press, Moscow 1983 and 1988. (German translation by Deutscher Verlag der Wissenschaften, Germany, 1984).
6. *What vibration can do? Vibrational Mechanics and Vibrational Technology*. Nauka Pres, Moscow 1988.
7. *Vibrational Mechanics: Nonlinear Dynamic Effects, General Approach, Applications*, Fizmatlit Publ. Company, Moscow 1994. (English translation by World Scientific Publ. Co., 1998 or later)