

# CV of PhD Sergey G. Lebedev

## Personal Data

PhD, Senior Scientist of Institute for Nuclear Research of Russian Academy of Sciences. Sergey G. Lebedev was born at December 4, 1956 in the city of Kursk, Russia. Mailing address: Otyabrsky Prospect, 9 flat 116, 108840, Troitsk, Moscow, Russia. Marital Status: married, 1987, wife Galina. Children: son Andrew, 1989. Phone Number: +7(495)851-07-14, e-mail: [lebedev@inr.ru](mailto:lebedev@inr.ru)

## Educational Background

S.G. Lebedev has graduated from the Dept. of Physics of Nuclear Reactors of the Moscow Physical Engineering Institute, 1980. In 1983 S.G. Lebedev has graduated from the Dept. of Mathematics of the Lomonosov Moscow State University.

## Job Experience

Since 1980 up to now S.G. Lebedev has worked at the Institute for Nuclear Research of Russian Academy of Sciences, Moscow. Now he occupies the position of Senior Scientist, Head of research team.

In 1991 S.G. Lebedev has obtained his PhD on the subject: "Radiation Stability and Thermomechanics of Solid State Targets Under High-Current Ion Bombardment"

The prime interests of Dr. S.G. Lebedev are in the field of Nuclear Physics and Physics of Solid State. Since 1980 up to 1984 he has calculated the parameters of Pulsed Neutron Source on the base of the Moscow Meson Facility (MMF), which is a 600 MeV linear proton accelerator. He calculated the thermal power yield in structure materials under proton and neutron bombardment. He evaluated the thermomechanics of such structure materials as Al, SS, Zr, graphite in the proton and ion beams. In collaborations with the colleagues he has developed the project of Pulsed Neutron Source, which has been put into operation in 1998.

Since 1985 up to 1990 S.G. Lebedev has been worked in the fields of radiation defects of structure materials. He has developed the physical model of carbon target failure under ion beams bombardment. Then in collaboration with the colleagues he calculated the radiation damages of structure materials of targets and beam stop of MMF. It was shown that radiation damage of samples at the beam stop are similar to that of first wall of thermonuclear reactor.

Since 1995 up to now he has worked in the field of nuclear physics. Dr. S.G. Lebedev proposed the time-of-flight neutron spectrometer on the base of proton beam stop of MMF. This project has been successfully finished in 2003. Now S.G. Lebedev proposed the gaseous radiochemical method for registration of ionizing radiation and its possible applications in science and industry.

Since 1990 up to now he studied some anomalous electromagnetic effects in carbon films. Some switching phenomena under critical currents, microwave radiation and magnetization oscillations have been found in some kinds of thin carbon films.

Under study of conductive properties of thin carbon films, the electrical resistivity jump of 4 to 5 orders of magnitude was observed at some "critical current". At room temperature the critical current value varied within the limits of 5-500 mA depending on sample deposition conditions. At temperature lowering the value of critical current increased. This reminds the behavior of field-effect ultimate fullerene switcher which is now under development in the USA (J.H. Schan et al., Science 288(2000)656.). The advantages of our switcher are the wide temperature range (up to 370C) as compared with 10K of fullerene switcher and insulator-like

state after switching. The switching time is of the order 1 nanosecond eliminating the thermal cause of switching.

The second interesting feature of carbon films is the AC- DC conversion under microwave irradiation. The DC voltage dependence can be described by the exponential decay law tending to zero at 370C. Also the magnetization oscillations have been observed at the magnetic field of the order 1-3 Tesla. Independent of the explanation of the results observed, carbon films can be used in applications as a Josephson-like non-cryogenic devices such as **detectors and generators of microwave radiation, switchers, magnetometers** and so on.

## **Other Relevant Information**

The project “Search for the Anomalous Electromagnetics of Carbon Condensates” managed by Dr. S.G.Lebedev was supported by Russian Foundation of Basic Research (RFBR), the Grant No 05-08-17909- a.

Dr. Lebedev is the author of 6 inventions supported by the patents of Russian Federation. Dr. Sergey G.Lebedev is the author and coauthor of about 200 scientific articles. He is a member of International Nuclear Target Development Society (INTDS). He is the reviewer of APS journal **Physical Review**.

Since 2014 Dr. S.G.Lebedev is a federal expert of Russian Federation in scientific and technical sphere N 4694.

**Yours sincerely**

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