ON THE 120TH ANNIVERSARY OF mikhail A. leontovich [[1]](#footnote-1)\*)

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Mikhail Alexandrovich Leontovich (March 7, 1903 – March 30, 1981) is an outstanding theoretical physicist, whose personal work and the work of his disciples in the two scientific schools he founded in radiophysics and plasma physics laid the theoretical foundation of these disciplines on the scale of world science.



Father M.A. - a physiologist, elected to Ukrainian SSR Academy of Sciences, mother - the daughter of an outstanding Russian mechanic V.L. Kirpichev. After graduating from Physics and Mathematics Faculty of Moscow State University (MSU), M.A. in 1925 became one of the first graduate students of the outstanding physicist L.I. Mandelstam. Together with him, he carried out pioneering work on the theory of tunnel effect (1928), participated in the creation of classical theory of Raman scattering of light in crystals. Having already become a professor at the MSU in 1934, he went to work at Lebedev Physical Institute and in 1935 awarded the degree of Doctor of Physics and Mathematics sciences, and in 1939 he was elected a corresponding member of the USSR Academy of Sciences.

During the war period M.A.Leontovich was evacuated together with the FIAN, but already in 1942 he was first appointed laboratory head of a defense plants, and in 1944 he was transferred to the Moscow Institute of the Electrical Industry People's Commissariat. In 1945, he returned to work at the Lebedev Physical Institute, where, since 1947, he had been in charge of the oscillation laboratory. In the first post-war elections to the Academy in 1946, he was elected a full member. From 1947 to 1954 he teaches at MEPhI, where since 1949 he has been head of the Theoretical Physics Department.

The main fundamental achievements of this period include the conditions at the boundary of a well-conducting medium (called the Leontovich boundary conditions), the equation for wave fields with slowly varying amplitudes (Leontovich parabolic equation), the theory of radio wave propagation along the Earth's surface, and (together with M.L. Levin) theory of thin wire antennas. For his work in radiophysics, M.A. Leontovich was awarded the A.S. Popov Gold Medal of the USSR Academy of Sciences.

In 1951, he was entrusted with the leadership of theoretical research on the problem of controlled thermonuclear fusion (CTF) in an academic laboratory, which later became the I.V. Kurchatov Institute of Atomic Energy. Created the theory of inertial compression of plasma with current. His ideas about balancing the toroidal stretching of a plasma with a current using a conductive vessel and about stabilizing a plasma coil by a strong magnetic field underlie the "tokamak" system. In 1958, he was awarded the Lenin Prize for research into powerful pulsed discharges in gas to obtain а high-temperature plasma.

Giving lectures at MEPhI and Moscow State University, M.A. Leontovich created teams of young scientists who won world recognition in radiophysics, plasma physics and CTF.

References

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/L/R/ru/KQ-Lisitsa.docx) [↑](#footnote-ref-1)