

## MSTISLAV KELDYSH

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Mstislav Vsevolodovich Keldysh (10 February 1911, Riga – 24 June 1978, Moscow) was a Soviet scientist in the field of mathematics and mechanics, academician of the USSR Academy of Sciences (1946), President of the USSR Academy of Sciences (1961–1975), three times the Hero of Socialist Labor (1956, 1961, 1971), and fellow of the Royal Society of Edinburgh (1968). He was one of the key figures behind Soviet space program. Among scientific circles of USSR Keldysh was known by the epithet "the Chief Theoretician" in analogy with epithet "the Chief Designer" used for Sergey Korolyov.

Keldysh was born in 1911 in Riga. When he was four, the family evacuated to Moscow to escape the First World War. In the first years of the Soviet Union he was refused entrance to an Institute of Civil Engineers because of his attachment to a noble family (1927). In the next years he managed to enter and graduate from the Physics and Mathematics Department of the Moscow State University (24 July 1931). He obtained employment at the Central Aero Hydrodynamic Institute (TsAGI) under Mikhail Lavrentyev and Sergey Chaplygin.

Working in TsAGI he explained the auto-oscillation effects of flutter (in-flight auto-induced oscillations and structural deformations), and shimmy (auto-oscillation in the nose-wheel of aircraft undercarriages while on the ground). Both works were mathematically beautiful and practical; both were important, as both effects were responsible for many aircraft catastrophes at the time.

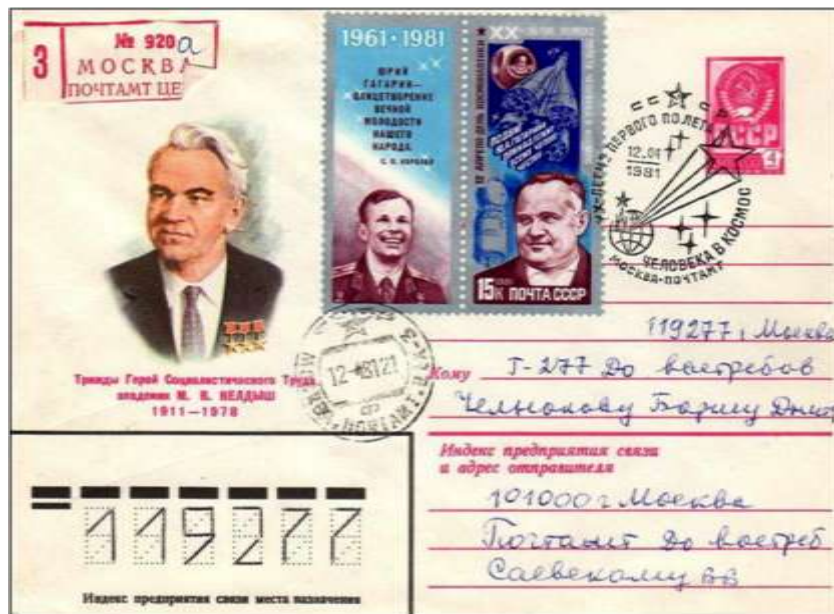


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In 1937 Keldysh became Doctor of Science (his dissertation's title was *Complex Variable and Harmonic Functions Representation by Polynomial Series*) and a Professor of Moscow State University. In 1943 he became a Corresponding Member of the USSR Academy of Sciences. He got his first Stalin Prize in 1946 for his works on aircraft auto-oscillations. In 1943 he also became a full member of the Academy and the Director of NII-1 (Research Institute number 1) of the Department of the Aviation Industry. He also headed the Department of Applied Mechanics of the Steklov Institute for Mathematics (in 1966 the department became Institute for Applied Mechanics, named after Keldysh).

During the 1940s Keldysh became the leader of a unique group of applied mathematicians involved in almost all large scientific projects of the Soviet Union. Keldysh created the Calculation Bureau that carried most of the mathematical problems related to the development of nuclear weapons. The bureau is also credited with the design of the first Soviet computers. In

1947 he became a member of Communist Party.

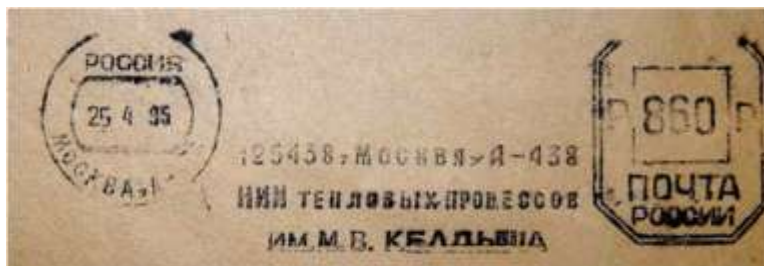


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Keldysh's main efforts were devoted to jet propulsion and rockets including supersonic gas dynamics, heat and mass exchange, heat shielding etc. 1959 saw successful testing of the Soviet first cruise missile, which displayed better performance than the Navajo missile being designed in USA at the time.

In 1954 Keldysh, Sergey Korolyov and Mikhail Tikhonravov submitted a letter

to the Soviet Government proposing development of an artificial satellite to orbit the Earth. This letter began the effort that culminated in the world's first satellite, Sputnik in October 1957, which marks the beginning of mankind's Space Age. In 1955 Keldysh was appointed chairman of the Satellite Committee at the Academy of Science. In recognition of his contribution to the problems of defense Keldysh was awarded the Hero of Socialist Labor (1956) and the Lenin Prize (1957). In 1961 he received a second Hero of Socialist Labor medal for his contribution to Yuri Gagarin's flight into space, the first person to orbit the earth.



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In 1961 Keldysh was elected President of the Academy of Sciences and kept this position for 14 years. He simultaneously became a member of the Central Committee of the Communist Party of the Soviet Union. His last scientific works were devoted to creation of the Shuttle Buran. In 1962 He was elected a member of the Supreme Soviet of the Soviet Union.

Keldysh was 67 when he died. He was honored with a state funeral and his ashes were buried in the Kremlin Wall Necropolis on Red Square.

Keldysh was a member of many foreign academies of sciences, including the Mongolian Academy of Sciences (1961), Polish Academy of Sciences (1962), Czechoslovak Academy of Sciences (1962), and Romanian Academy of Sciences (1965). He was also an honorary member of the American Academy of Arts and Sciences (1966), Bulgarian Academy of Sciences (1966), Hungarian Academy of Sciences (1970), and Royal Society of Edinburgh (1968), foreign corresponding member of the German Academy of Sciences (1966), and Saxon Academy of Sciences in Leipzig (1966).



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Keldysh was awarded the USSR State Prize (1942, 1946), Lenin Prize (1957), six Orders of Lenin, three other orders, numerous medals and four foreign orders.

The crater Keldysh on the Moon, and a research vessel Akademik Mstislav Keldysh are named after him. A minor planet, 2186 Keldysh discovered in 1973 by Soviet astronomer Lyudmila Chernykh, is named in his honor. See [1].

1. Mstislav Keldysh. From Wikipedia, the free encyclopedia.