Lobachevsky Year Started at Kazan University

The 225th anniversary of an outstanding mathematician and university administrator will be celebrated by a number of events.

The Center of Mathematical Education will be opened this year, several conferences will be held, including the traditional Lobachevsky Readings and the Lobachevsky Olympiad for students. The Olympiad may become international this time.

The year will be concluded by the Mathematics Day – a new scientific holiday established by KFU to coincide with Lobachevsky's birthday (December 1st). The first one will be held on December 1st, 2017. The Lobachevsky Medal, re-established thanks to the support of the provincial government, will also be awarded on this day – and further on biennially.

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Nikolai Ivanovich Lobachevsky (1 December [O.S. 20 November] 1792 – 24 February [O.S. 12 February] 1856) was a Russian mathematician and geometer, known primarily for his work on hyperbolic geometry, otherwise known as Lobachevskian geometry.

Lobachevsky was born in Nizhny Novgorod in a poor public official's family. He and his two brothers moved to Kazan in 1801 after father's death and were admitted to a state-funded school thanks to their mother's care. The scientist's further life path was tied with Kazan and Kazan University. Lobachevsky attended Kazan Gymnasium from 1802, graduating in 1807 and then received a scholarship to Kazan University, which was founded just three years earlier in 1804.

At Kazan University, Lobachevsky was influenced by professor Johann Christian Martin Bartels, a former teacher and friend of German mathematician Carl Friedrich Gauss. Lobachevsky received a master's degree in physics and mathematics in 1811. During his studies he entered an amicable academic rivalry with future astronomer and journeyman Ivan Simonov. Lobachevsky started lecturing in 1814.

The next period of his academic life fell on very hard years for Kazan University. New government policies lied in hard crackdowns on “vol'nodumstvo” (freethinking), especially in universities. Kazan University was nearly shut down, but Alexander I decided to right the apparent wrongs instead by appointing a new ultraconservative academic supervisor Mikhail Magnitsky in 1819.

Lobachevsky immersed himself into academic work during the seven years of this hard policing. He gave lectures in mathematics, physics, astronomy and geodesy. He also contributed immensely to the growth of the library (now Lobachevsky Library). He oversaw the construction of the Main Building of Kazan University, now one of the gems of Russian architectural heritage. He wrote two textbooks for middle schools (algebra and geometry), none of which went into series. Supervisor Magnitsky was also suspicious about Lobachevsky's loyalty and kept an eye on him.

All this pressure didn't deter the young academic from his inquiries into the basics of geometry. First traces can be found in his study materials from 1817. Several years of research led to a decisive breakthrough. On 23 (old style - 11) February 1826 he made a report to the department. The report was then sent for a peer review. The review did not follow, and Lobachevsky published his findings in 1829 – 1830 in Kazan Messenger.
The non-Euclidean geometry that Lobachevsky developed is referred to as hyperbolic geometry. Lobachevsky replaced Playfair's axiom with the statement that for any given point there exists more than one line that can be extended through that point and run parallel to another line of which that point is not part. He developed the angle of parallelism which depends on the distance the point is off the given line. In hyperbolic geometry the sum of angles in a hyperbolic triangle must be less than 180 degrees. Non-Euclidean geometry stimulated the development of differential geometry which has many applications. Hyperbolic geometry is frequently referred to as "Lobachevskian geometry" or "Bolyai–Lobachevskian geometry".

Another of Lobachevsky's achievements was developing a method for the approximation of the roots of algebraic equations. This method is now known as the Dandelin–Gräffe method, named after two other mathematicians who discovered it independently. In Russia, it is called the Lobachevsky method. Lobachevsky gave the definition of a function as a correspondence between two sets of real numbers (Peter Gustav Lejeune Dirichlet gave the same definition independently soon after Lobachevsky).

New academic supervisor, Mikhail Musin-Pushkin, was appreciative of Lobachevsky's hard work and multiple activities, so Lobachevsky was elected Rector in 1827 and served in that position for 19 years.

Lobachevsky strived to implement a forward-thinking comprehensive curriculum, a view that he presented in his report «On the Most Important Subjects of Education» in 1828. During his tenure a number of important buildings were added to the university campus: a library, astronomical and magnetic observatories, an anatomical theatre, a physics room and a chemistry lab. He founded a scientific journal series Uchenye Zapiski Kazanskogo Universiteta in 1834, now the main peer-reviewed journal at Kazan University. He was a very capable operator during a cholera epidemic in 1830 and a great city fire in 1842. Almost none of the university possessions suffered during the latter, unlike the whole of the city.

Meanwhile, Lobachevsky's revolutionary work was not well received. His first work was submitted to the Saint-Petersburg Academy of Sciences in 1832 to eventually be discarded as negligible. A derisive anonymous review then appeared in 1834 in the “Son of Fatherland” magazine supervised by a news mogul Faddey Bulgarin.

However, he kept on working and published "New foundations of geometry with a complete theory of parallels" (1835–38).

Lobachevsky's work didn't get a proper commendation from the government. He was finally dismissed from the Rector's position and appointed Deputy Supervisor – but without a department chair. Thus he lost any clout at the University and could not even recommend a worthy successor for the Department of Mathematics.

His health began deteriorating because of the work troubles and his elder son's passing in 1852. He started losing eyesight but continued visiting exams, meetings, and scientific discussions.

Lobachevsky, despite becoming totally blind, admirably persisted in his academic vision. He dictated his last work, Pangeometry (1856), to his young students.

The great researcher and academic passed away on 24 (12) February 1856.

Honors

Lobachevsky Street and Lobachevsky Library (Kazan)

Lobachevsky University (Nizhny Novgorod)

1858 Lobachevsk, an asterio discovered in 1972, was named in his honor

The lunar crater Lobachevskiy was named in his honor

Lobachevsky Medal, a geometry award by Kazan Federal University