

Background information

Brief profile of the ETH Department of Mathematics (D-MATH)

Mathematics at ETH Zurich: tradition with a future



Mathematicians around 1940. (Photo: ETH Library)

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Mathematics is of fundamental importance as a cornerstone of the natural, engineering and social sciences. The Department of Mathematics at ETH Zurich (D-MATH) teaches and conducts research in all areas of mathematics at the highest international level and fosters further education and knowledge transfer.

Mathematics has always played a key role as a foundation discipline at ETH Zurich: in the early years of the Federal Polytechnical School (founded in 1855), it was tailored to the practical needs of engineers undergoing training. Subsequent to the appointment of the German mathematician Richard Dedekind in 1858, ETH repeatedly succeeded in attracting internationally outstanding mathematicians to Zurich. The first third of the 20th century saw mathematics established as an autonomous research field at ETH. Renowned scientists such as Hermann Minkowski, Hermann Weyl and Albert Einstein were instrumental in establishing a symbiosis

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between mathematics and theoretical physics at ETH: since 2013 ETH Zurich has co-directed the National Centre of Competence in Research "Mathematics of Physics (NCCR SwissMAP)". ETH Zurich gained its excellent reputation in algebraic topology under Heinz Hopf, starting in 1931. In his honour, D-MATH has, since 2009, awarded the Heinz Hopf Prize on a biennial basis to outstanding papers in pure mathematics.

After World War II, ETH expanded mathematics to include numerical and computational mathematics, statistics and probability theory, operations research and insurance mathematics, as well as logic and computer science (a standalone discipline since 1981). D-MATH continues to provide the business sector with continuing education and consultancy services in these areas, e.g. in the form of CPD for actuaries, as well as in applied statistics and in data sciences.

ETH Zurich is a world leader in mathematics teaching and research, appearing in eighth place in important university rankings (THE, QS). **Two Fields Medallists** (Wendelin Werner 2006, Probability Theory; Alessio Figalli 2018, Analysis) and **10 ERC Grants since 2007** underpin ETH's reputation as a centre of excellence in mathematics. With 33 full professorships, 11 assistant professorships and 5 adjunct professors, **D-MATH is today the largest of ETH's 16 departments.**

In addition to providing instruction on mathematics degree programmes, D-MATH supplies 70 percent or so of its teaching services to other ETH programmes as well as teacher training. **Almost 1000 people are studying mathematics** at a bachelor's, master's or doctoral level at ETH Zurich. In 2017 200 degrees were awarded (56 bachelor, 105 master, 26 doctoral), as well as 13 teaching diplomas for baccalaureate schools. One year after graduation, a multiple year average of **some 88% of D-MATH's master's degree graduates are economically active**, rising to around 94% for doctoral graduates. The master's graduates work predominantly in universities (those with doctorates), banks, insurance companies and in schools.

Epochs in the history of mathematics at ETH Zurich

1855-1892: Rise from auxiliary science to an independent field of teaching and research.

1892-1932: International Congress of Mathematicians ICM held twice in Zurich (1897, 1932). Onset of symbiosis of mathematics and physics. New career opportunities in industry.

1930s-1960s: Thematic expansion of teaching and research in applied mathematics. 1964 Founding of the Institute for Mathematical Research (FIM) for international researchers.

1970s-present day: International excellence. ICM 1994 in Zurich. **1976** Founding of the department, 1994 RiskLab in financial and actuarial mathematics, 2003 Zurich Graduate School in Mathematics (with University of Zurich UZH).

Further information is available at: www.math.ethz.ch und www.ethz.ch/history-math .

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