

Algebraic K -theory, founded by Grothendieck and extended by Quillen, through the decades became connected with many fields in mathematics and parts of mathematical physics. It gave rise to motivic cohomology, a key ingredient of Voevodsky's proof of the Milnor conjecture. The goal of this programme was to bring together experts and young researchers from algebraic K -theory, motivic cohomology, arithmetic, Hodge theory, and mathematical physics, and stimulate the connections among those fields.

Grothendieck in the 60s wanted to explain the shared properties of various cohomology theories for algebraic varieties in terms of a universal *motivic* theory, but his approach required affirmative answers to hard (and still open) conjectures on algebraic cycles, like those by Hodge and Tate. His work related algebraic K -groups and the classical Chow groups based on algebraic cycles. Similarly, Quillen's later higher K -groups found a cycle theoretic analogue in Bloch's higher Chow theory, which initiated the development of (a different) motivic cohomology.

In a separate development, Borel and Bloch in the 70s discovered, for certain varieties over number fields, a relation between regulators of their algebraic K -groups and special values of L -functions. Beilinson provided a common framework for these results and, e.g., the Birch-Swinnerton-Dyer conjecture. Later refinements brought in Hodge theory as well as arithmetic tools.

Hodge theory and motivic methods also found application in string theory and mirror symmetry. Recently, surprising relations were established between regulators and Feynman integrals, and height pairings were related to quantum field theory.

Spectacular new techniques developed in the past few decades resulted in proofs of important conjectures by Milnor and by Bloch and Kato, and stimulated new approaches to existing questions. To foster these, the programme brought together young researchers and leading experts across the many fields.

It started in January 2020 with a lively introductory workshop aimed at PhD-students, providing background knowledge through lectures series. The momentum continued with seminar series and a study group on Picard-Fuchs differential equations related to the irrationality of $\zeta(3)$. After a two year interruption due to the pandemic, the programme continued, stimulating discussions and bringing the diverse fields together through seminars, and a study group on Kim's approach to finding rational points on hyperbolic curves. The three research level workshops, supported by ample external funding and preceded by more background lectures, buzzed with activity.

Highlights include the Rothschild lecture by Bloch, the Kirk lecture by Parimala, the Clay lecture by Griffiths, new results presented by strong young people (Bachmann, Dogra, Mathew, Morrow, Tang, ...), and a well-received public talk for the INI birthday celebration about the programme by Whitcher (which may result in an AMS Feature Column). The intense atmosphere stimulated existing collaborations and produced many new ones, resulting in various papers and preprints, and some future conferences in subfields of the programme being planned.