

# EQUIVARIANT HOMOTOPY THEORY IN CONTEXT

## SHORT REPORT

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Over the last decade, there has been an explosion of impressive results in homotopy theory and at its interfaces with algebraic geometry and algebra, enabled by new equivariant techniques. Motivated by these promising developments and with the goal of building on this momentum, the EHT programme assembled experts and young researchers from throughout homotopy theory, as well as adjacent areas, around the common theme of equivariant methods. Numerous new connections and collaborations developed among programme participants, leading to exciting research progress. The visibility of the younger generation of researchers in the field was also significantly increased, by virtue of the talks they gave and of the ease of informal mathematical discussion among programme participants. The EHT programme played an important role in expanding and strengthening the international network of algebraic topologists, in particular by integrating new early-career researchers into the community.

The programme was organised around three topics: operads and calculus, chromatic and motivic homotopy theory, and algebraic K-theory and related theories. An introductory workshop in January provided an intensive overview of equivariant methods in homotopy theory and a survey of recent developments, featuring lecture series on equivariant algebra, chromatic homotopy theory and equivariant Thom spectra. In April, a satellite workshop at Queen's University, Belfast, focused on operads and calculus, with a lecture series on each by leading researchers, and slots for contributed talks by early-career researchers. The programme's third workshop in May surveyed developments in equivariant homotopy theory and connections to algebraic geometry, motivic homotopy theory and number theory. The final workshop of the programme took place in June and presented various perspectives on stable homotopy theory and related topics in the light of the disproof of the telescope conjecture. The final week of the programme included a one-day workshop on topological advances in the life sciences, in which leading academic and industry researchers at this productive interface presented an overview of useful topological tools and of important biological results established using them.

The programme featured weekly seminars comprising two hour-long talks, as well as a weekly gong show consisting of four 10-minute talks. A high proportion of programme participants had the opportunity to present their work, with the gong show in particular proving an excellent stimulant for mathematical conversations. Further social activities took place regularly. Other events, such as a panel discussion on "Building and maintaining a welcoming community" and public lectures, fostered interactions with parallel programmes.

The EHT programme welcomed both long-term participants and visitors who stayed for shorter periods, particularly early-career researchers, resulting in a vibrant community. Many of the visitors took advantage of their time in the UK to speak in seminars around the country.

The institute offered a welcoming and stimulating atmosphere for progress in equivariant homotopy theory. Positive effects are already visible, especially in terms of new collaborations and exciting new papers. The programme has clearly laid the foundations for substantial advances in the subject in the near future.