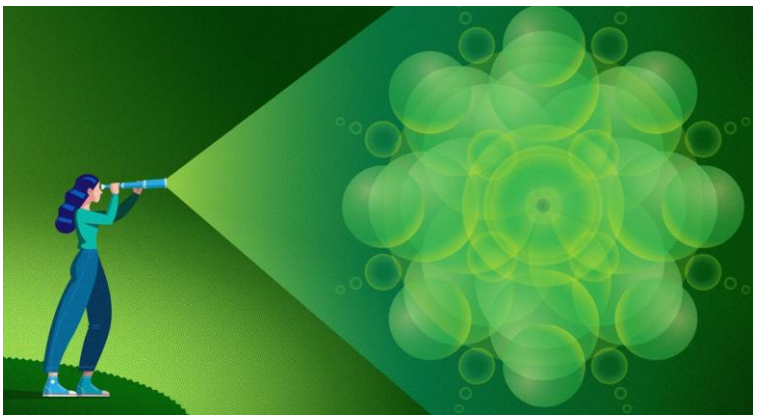
GEOTOP: CENTRE HIGHLIGHTS 2023

The year 2023 was a busy year with respect to events, with 5 masterclasses hosted at the center, together with additional smaller and bigger events throughout the year, attracting in particular more than 380 senior and junior mathematicians from around the world, our highest number of visitors so far. GeoTop was well-represented internationally too. Wahl was a plenary speaker at the *Nordic Congress of Mathematicians*, that celebrated the 150th anniversary of the Danish mathematical society, where Wahl and NM Møller also co-organised a special session in topology and one in geometry. And center members were invited to report on our latest findings at the four corners of the world, including wide audience lectures with for example Randal-Williams giving an invited lecture at *Panorama of Mathematics II* in Bonn, both Burklund and Galatius at *A panorama of homotopy theory* at Oxford, and Colding, who gave the D'Arti lectures at Rutgers this year, where he gave a panorama of the min-max theory for the area functional. All in all, center members gave more than 60 talks internationally.

Center PhD student Ramzi was the recipient of an Elite research travel grant for his project "Homotopic algebra: a new look at equality". An equality in mathematics normally comes with an explanation, and sometimes there might be several reasons why two things are equal. A reason for being equal is called an *isomorphism*, and isomorphisms play a crucial role in much of the work we do at the centre.

Significant progress happened on our research, and we give here a few highlights.



Samuel Velasco/Quanta Magazine

A major research highlight this year was a disproof of the *Telescope Conjecture* by Burklund and coauthors. A consequence of this 100 pages manuscript is that there are many more exotic spheres than we thought! The authors were invited to give series of talks to present the result at several international conferences this year. The result was also featured in the magazine Quanta (whose illustration of the work we reproduced here), that wrote an article about it, aimed at the general public.

Other research highlights include a new calculation of mod p homology of configuration spaces of surfaces by Bianchi and a new uniqueness result for self-translating solitons by NM Møller and coauthors. Randal-Williams's paper with Kupers *On diffeomorphisms of even-dimensional discs* was accepted for publication in the prestigious Journal of the American Mathematical Society.

6 PhD students (Aumonier, Cordova, Muhammad, Subramanian, J Zhang, Aamand) defended their thesis at GeoTop this year, reminding us that the centre has been at full speed for some time now!

By the end of the year, the centre counted 11 permanent members, 1 senior visiting members, 4 associated member, 13 postdocs, and 14 PhD students.