

Annual Highlights 2022

DNRF Chair Peter Jørgensen, Aarhus University

The DNRF Chair consists of three postdocs (Jenny August, Nicola Bellumat, and Raphael Bennett-Tennenhaus), a PhD student (Anders Kortegaard), and the PI, Peter Jørgensen.



With further support from the AUFF and the IRFD, the PI hosts three more postdocs (Esther Banaian, Karin Jacobsen, and Amit Shah) and two more PhD students (Carlo Klapproth and David Nkansah).



Together, these ten mathematicians form the internationally recognised Aarhus Homological Algebra Group. Considerations of Equality and Diversity formed an integral part of recruitment, and this is reflected in the composition of the group.

The highlight of 2022 was the workshop “Geometric and Combinatorial Methods in Homological Algebra”, held over three days in July and funded by the DNRF Chair. The event had 15 international speakers and attracted 40 participants, despite being planned and announced during the last peak of Covid.



We also hosted two symposia in 2022, each with three international speakers, as well as 13 seminars, mainly with international speakers. Among all speakers at the workshop, symposia, and seminars, 52% were female.

Members of the DNRF Chair gave numerous international talks. Among the highlights were invited talks by Jenny August at the Mathematisches Forschungsinstitut Oberwolfach in Germany, by Raphael Bennett-Tennenhaus at the International Conference on Representations of Algebras in Argentina, and by Peter Jørgensen at the Abel Symposium in Norway.

A total of five papers and seven preprints were published in 2022 by members of the DNRF Chair. The paper “Categories for Grassmannian cluster algebras of infinite rank” by Jenny August et al. was accepted for publication in the prestigious International Mathematics Research Notices, and “Stability conditions for contraction algebras” by Jenny August et al. was published in Forum of Mathematics Sigma, a leading journal. This paper accomplished a breakthrough by determining the full stability manifolds of contraction algebras associated to 3-fold flops. Contraction algebras are key objects associated to Calabi—Yau categories, and finding the full stability manifold is considered a hard problem. Another notable result was accomplished by Anders Kortegaard, who proved that self-injective 2-Calabi—Yau tilted algebras are derived equivalent. This was previously known under strong technical assumptions, which have all been eliminated in Kortegaard’s result.