Survey on fully nonlinear curvature flows and applications

Julian Scheuer
Institut für Mathematik, Goethe-Universität Frankfurt, Germany
scheuer@math.uni-frankfurt.de

Curvature flows have been one of the key subjects in geometric analysis for almost half a century, with striking applications in other field of geometry. They all share the property of being partial differential equations. The famous mean curvature flow is a quasi-linear example, but also fully nonlinear flows have allowed applications for example in convex geometry, in particular for isoperimetric type inequalities. In this talk we survey the historical motivation to study these flows and give a few very recent highlights and developments, especially in the context of spherical geometry.

Acknowledgements

Joint work with Shujing Pan.

Supported by the DFG (German Research Foundation, DFG), project "Curvature flows with local and nonlocal sources", SCHE 1879/4-1.

References

[1] S. Pan and J. Scheuer, *The quermassintegral inequalities for horo-convex domains in the sphere*, Preprint, https://doi.org/10.48550/arXiv.2512.12565

[2] S. Pan and J. Scheuer, *Capillary quermassintegral inequalities in the unit ball*, Preprint, https://doi.org/10.48550/arXiv.2604.15993