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## A new mean curvature type of flow and its fully nonlinear version

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In this talk, we will present a new type of mean curvature flow. For any closed star-shaped smooth hypersurface, this flow exists for all time  $t > 0$  and exponentially converges to a round sphere. Moreover, we will show that all the quermassintegrals evolve monotonically along this flow. Consequently, we prove a class of isoperimetric type of inequalities including the classical isoperimetric inequality on star-shaped domains. We will also present a fully nonlinear analogue of this flow. More specifically, we study a fully nonlinear parabolic equation of a function on the standard sphere and discuss its long-time existence and exponential convergence. As applications, we recover the well-known Alexandrov–Fenchel inequalities on bounded convex domains in Euclidean space.

*This is joint work with Pengfei Guan.*

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