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Pengfei Guan and **Junfang Li*** (jfli@uab.edu). *A fully non-linear flow equation on the sphere and Alexandrov-Fenchel inequalities*. Preliminary report.

In this talk, we will introduce a fully nonlinear parabolic partial differential equation defined on the sphere. We will discuss the long time existence and exponential convergence of the flow. As an application we prove the Alexandrov-Fenchel inequalities including the classical isoperimetric inequality for star-shaped domains in Euclidean space. (Received August 29, 2011)