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Jeremy LeCrone*, Department of Math & Computer Science, 212 Jepson Hall, 28 Westhampton Way, Richmond, VA 23173, and **Yuanzhen Shao** and **Gieri Simonett**. *Dynamics of quasilinear evolution equations on critical spaces.*

We consider a class of quasilinear parabolic evolution equations with nonlinear terms satisfying a prescribed singular structure. Such nonlinear terms are observed in many geometric evolution equations, such as the surface diffusion and the Willmore flow. We will discuss how the structure of the nonlinearities indicates a critical space of initial values on which we establish well-posedness and stability of equilibria. We discuss applications to the surface diffusion flow in various settings, acting on uniformly regular hypersurfaces embedded in Euclidean space. (Received September 07, 2019)