

Ricci flow of regions with curvature bounded below in dimension three

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We consider smooth complete solutions to Ricci flow with bounded curvature on manifolds without boundary in dimension three. Assuming a ball at time zero of radius one has curvature bounded from below by -1 , then we prove estimates which show that compactly contained subregions of this ball will be smoothed out by the Ricci flow for a short but well defined time interval. The estimates we obtain depend on the initial volume of the ball and the distance from the compact region to the boundary of the initial ball. They do not depend on the upper bound of the curvature on the ball at time zero. Versions of these estimates for balls of radius r follow using scaling arguments.