

Curvature bounds via an isoperimetric comparison for Ricci flow on surfaces

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Abstract. A comparison theorem for the isoperimetric profile on the universal cover of surfaces evolving by normalised Ricci flow is proven. For any initial metric, a model comparison is constructed that initially lies below the profile of the initial metric and which converges to the profile of the constant curvature metric. The comparison theorem implies that the evolving metric is bounded below by the model comparison for all time and hence converges to the constant curvature profile. This yields a curvature bound and a bound on the isoperimetric constant, leading to a direct proof that the metric converges to the constant curvature metric.

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