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Bing Wang* (bingw@math.princeton.edu). *on the gap phenomena of singularities of the Ricci flow.*

We develop some estimates under the Ricci flow and use these estimates to study the blowup rates of curvatures at singularities. As applications, we obtain some gap theorems: $\sup_X |Ric|$ and $\sqrt{\sup_X |Rm|} \cdot \sqrt{\sup_X |R|}$ must blowup at least at the rate of type-I. Our estimates also imply some gap theorems for shrinking Ricci solitons. (Received June 15, 2011)