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The problem of finding Kähler metrics of constant scalar curvature (henceforward cscK metrics) on the blow-up \tilde{M} in a collection of points of a compact Kähler manifold which already has such a metric ω is important from the point of view of producing new examples and in relation to the fundamental question about the relation between K-stability and existence of cscK metrics. A number of ‘blow-up theorems’ asserting the existence of cscK metrics on \tilde{M} are now available, due to the work of Arezzo, Pacard, and independently, Székelyhidi.

In the present work, a new approach to this problem is proposed which gives much more precise information about the cscK metrics constructed on \tilde{M} and in particular their dependence on the parameter ϵ which determines the size of the exceptional divisor(s) in \tilde{M} . Indeed, it is shown that there is a 1-parameter family of such metrics $\tilde{\omega}(\epsilon)$ on \tilde{M} which is essentially smooth in ϵ down to $\epsilon = 0$. Geometric microlocal methods and concepts are used, in particular conormal distributions on manifolds with corners. (Received February 04, 2013)