A MULTIDIMENSIONAL RESOLUTION OF SINGULARITIES

We formulate a resolution of singularities algorithm for analyzing the zero sets of real-analytic functions in dimensions $\geqslant 3$. As an application, we compute the critical integrability index for real-analytic functions and obtain the sharp growth rate of their sublevel sets. This also leads to a characterization of the oscillation index of scalar oscillatory integrals with real-analytic phases in all dimensions. This is joint work with Tristan Collins and Allan Greenleaf.