

**Meeting:** 1003, Atlanta, Georgia, SS 34A, AMS Special Session on Algorithmic Algebraic and Analytic Geometry, I

1003-14-1310      **Michael Greenblatt\*** ([m.greenblatt@comcast.net](mailto:m.greenblatt@comcast.net)). *Effective methods for resolving singularities in the plane with applications to analysis.*

We describe an effective method for locally resolving the zero set of a real-analytic function  $f(x, y)$ . The method is geometric and involves doing a finite sequence of transformations of the form  $(x, y) \rightarrow (x, y - g(x^{\frac{1}{N}}))$  for appropriate real-analytic functions  $g$ , where  $N$  is an integer. After these transformations, a branch of the zero set of  $f(x, y)$  will be (locally) given by  $\{(x, y) : x > 0, y = 0\}$  or  $\{(x, y) : x < 0, y = 0\}$ . This method has applications to oscillatory integral operators, as well as to the determination of the largest  $\epsilon$  for which  $\int |f|^{-\epsilon}$  is finite near a given zero of a function  $f(x, y)$ . (Received October 04, 2004)