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IMPLEMENTING AN ALGORITHM FOR LOCATING COMPLEX ZEROS OF ANALYTICAL FUNCTIONS IN THE COMPLEX PLANE

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Implementing an Algorithm for Locating Complex Zeros of Analytical Functions in the Complex Plane

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ABSTRACT

In this work we have implemented an analytical method for computing the zeros of an analytic complex function using Matlab. We can find all the zeros of a complex function which lie in a given closed region as an application of Cauchy's Theorem. There are many problems for which it is necessary to locate the complex zeros of a given function. We will focus on an application in microfluidics. We can predict the length and time a capillary jet will take to break. In order to do this, we perform a linear stability analysis of the equations describing the jet. This analysis will lead to a dispersion relation which solutions will predict the normal modes of the jet. Our algorithm will locate all the normal modes without using any numerical techniques.

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