Applications of z-transform for single-parameter physical problems CHUN F. SU, CHARLIE A. SPARROW, TRACY MILLER, ROBERT L. COOK, PERRY PERKINS, Mississippi State University — The z-transform of a function consists of both real and imaginary parts. The magnitudes of these two parts of the transform will depend upon the variable of the function. It is feasible to establish a relationship between the z-transform and the variable of the function. The established relationship can be used to facilitate analysis of some single-parameter practical problems. A few years ago, a study of the rocket engine simulator combustion was performed at Mississippi State University. The combustion temperature was determined to be around 3000K by using the recorded hydroxyl OH emission spectra. The OH emission spectra have been revisited recently to re-evaluate the combustion temperature by means of the z-transform. It has been found that the newly calculated results can be more reliable than the previous ones. Comparison of the current and previous results and some discussion will be presented.

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