A CORRECTION TO A HIGHLY ACCURATE VOIGT FUNCTION ALGORITHM

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An algorithm for rapidly computing the complex Voigt function was published by Shippony and Read [1]. Its claimed accuracy was 1 part in $10^8$. It was brought to our attention by Wells [2] that Shippony and Read [1] was not meeting its claimed accuracy for extremely small but non zero $y$ values. Although true, the fix to the code is so trivial to warrant this note for those who use this algorithm. In the code, there exist in two subroutines, $\text{VoigtR1}$ and $\text{VoigtR3}$ a threshold variable called $\texttt{tiny} = 1.0d-12$. Any value of $10^{-12} > y > 0$ may have have errors exceeding the target accuracy. The parameterization for $\texttt{tiny}$ should have been the minimum precision of the computer (it is machine dependent, for the SGI origin it is $\texttt{tiny} = 2.2d-16$). Fortunately, FORTRAN 90 has a function, $\texttt{epsilon(y)}$ that returns the smallest allowable value therefore setting $\texttt{tiny} = \texttt{epsilon(y)}$ will ensure the algorithm’s accuracy on any platform. We thank R. J. Wells for bringing this error to our attention.

References