

# Daily Research Report

Jeffrey Severino  
University of Toledo  
Toledo, OH 43606  
email: [jseveri@rockets.utoledo.edu](mailto:jseveri@rockets.utoledo.edu)

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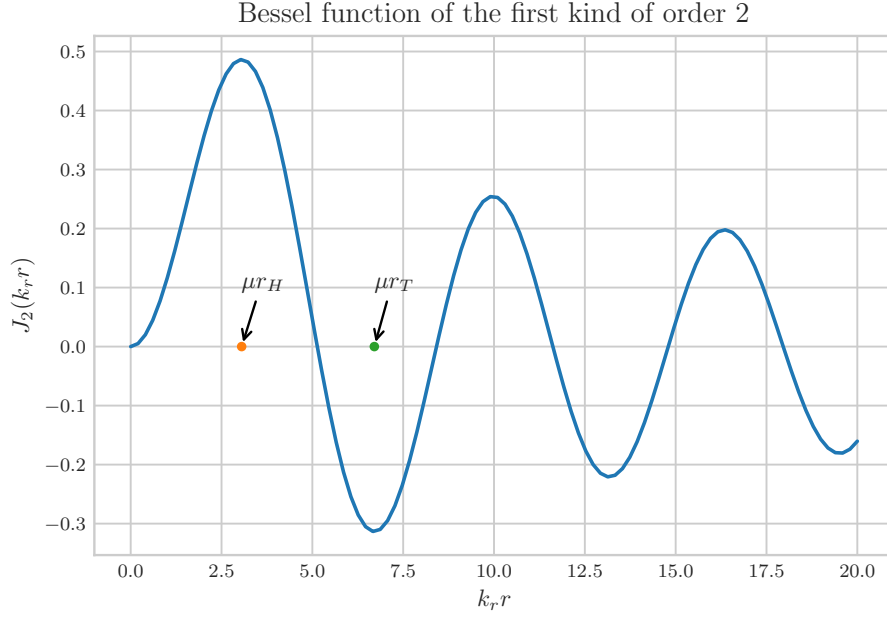


Figure 1: Bessel Function of the First Kind with the zero crossings of its derivative identified

## 1 Current Research Direction

The goal is to complete the validation for SWIRL.

## 2 Research Performed

The axial wavenumbers for a uniform flow case where  $m = 2$ ,  $M = 0.3$  and  $k = -1$  is presented.

The acoustic modes are along the cut off line (parallel to the imaginary axis) and the convective modes are to the left or right of the line

## 3 Issues and concerns

There is a 0,0 mode that also has 0 crossings that was omitted. Will investigate this further.

## 4 Planned Research

Finish documentation.

