General Program Information

Input Definitions

Inputs Needed to Call the Channel Function

Inputs Defined within the Channel Function
origin - is a 3*1 matrix with x,y,z positions corresponding to the point where the first lamella will be drawn.

amp - specifies the amplitude of the lamina

w - specifies the width of an individual lamina

l - specifies the length of an individual lamina

t - specifies the thickness of an individual lamina

periods - specifies the period of one curve of the lamina.

angle - specifies the angle of the lamina relative to the floor of the tank.

numbaffles - specifies the number baffles in the tank

numbafflescol -

xspace -

yspace -

**Technical Program Outline**

**lamina**₀ - The `zoomwin` function creates a close-up view based on two points to specify the window size.

p1:
- x: origin₀ - w - zc
- y: origin₁
- z: origin₂

p2:
- x: origin₀ + w + zc
- y: origin₁ + 1 + zc
- z: origin₂

**for loop** - a for loop is created for the range from i = 0 to i = (periods*4).

**lamina**₀₀ - Every time the program runs through the for loop another sine wave is drawn.
\(\text{lamina}_{\text{last}}:\)
\begin{itemize}
  \item x: \(\text{origin}_0 + \sin(#i/2)\cdot\text{amp}\)
  \item y: \(\text{origin}_1 + i\cdot(x/(\text{periods*4})\)
  \item z: \(\text{origin}_2\)
\end{itemize}

\(\text{lamina}_{i+1}\) - Uses the 'point' function to turn the 3*1 matrix \(\text{lamina}_{\text{last}}\) into a text format that AutoCad can read.

\(\text{lamina}_{i+2}\) - Uses the 'concat' function create a character string out of a space and the point (\(\text{origin} - zc_{\text{point}}\)).

\(\text{lamina}_{i+3}\) - Uses the 'point' function to turn the 3*1 matrix (\(\text{lamina}_{\text{last}} + zc_{\text{point}}\)) into a text format that AutoCad can read.

\(\text{lamina}_{i+4}\) - Enters the command "offset" into AutoCad. The offset function is used to move the selected object a specified distance from its original location.

\(\text{lamina}_{i+5}\) - The command 'stringit' turns the the variable "t" into a dimensionless number and cuts the number off after 5 decimal points. \(t\) represents the distance that the selected object is to be offset.

\(\text{lamina}_{i+6}\) - Uses the 'point' function to turn the 3*1 matrix 'origin' into a text format that AutoCad can read.

\(\text{lamina}_{i+7}\) - Uses the 'point' function to turn the following 3*1 matrix into a text format that AutoCad can read.
\begin{itemize}
  \item x: \(\text{origin}_0 + t\)
  \item y: \(\text{origin}_1\)
  \item z: \(\text{origin}_2\)
\end{itemize}

\(\text{line}_0\) - Uses the 'concat' function to create a character string out of the point 'origin' a space and the point converted in line \(\text{lamina}_{i+7}\).

\(\text{line}_1\) - Uses the 'concat' function to creat a character string out of the point '\(\text{lamina}_{\text{last}}\)' a space and the point described below into Autocad.
\begin{itemize}
  \item x: \(\text{lamina}_{\text{last0}} + t\)
  \item y: \(\text{lamina}_{\text{last1}}\)
  \item z: \(\text{lamina}_{\text{last2}}\)
\end{itemize}

\(\text{lamina}_{i+8}\) - Uses the 'concat' function to create a character string out of a space, the AutoCad command "line," a space, the character string created in line \(0\), and a space. The purpose of the character string is to create a line in AutoCad between the two points specified in line \(0\).

\(\text{lamina}_{i+9}\) - Uses the 'concat' function to create a character string out of a the AutoCad command "line," a space, the character string created in line \(1\) and a space. The purpose of the character string is to create a line in AutoCad between the two points specified in line \(1\).

\(\text{lamina}_{i+10}\) - Uses the 'concat' function to create a character string out of the AutoCad command "z e region w," a space, a point described below, a space, the second point described below and a space. The purpose of the character string is to create a region based on the two points specified.

first point:
\begin{itemize}
  \item x: \(\text{origin}_0 - \text{amp}\)
  \item y: \(\text{origin}_1\)
  \item z: \(\text{origin}_2\)
\end{itemize}

second point:
\begin{itemize}
  \item x: \(\text{lamina}_{\text{last0}} + t + \text{amp}\)
  \item y: \(\text{lamina}_{\text{last1}}\)
• z: lamina_last2

z: zoom
e: extents
region: creates a region based on two specified points.
w: specifies corners for the window in which the region is to be created.

`lamina_{i+11}` - Uses the concat function to create a character string out of the AutoCad command `extrude`, a space, the point 'origin,' a space, a space, the variable 'l,' a space and the "0."

`lamina_{i+12}` - Uses the concat function to create a character string out of the AutoCad command `rotate3d`, a space, the point 'origin,' a space, a space, the command "y," a space and a `num2str (-(90-angle/deg))` if the angle is not 90 degrees.

`lamina_{i+13}` - Uses the concat function to create a character string out of the AutoCad command `array`, a space, the point 'origin,' a space, a space, the command "R," a space, `num2str(num_{bafflecols})`, a space, `num2str_{baffles}` and a space.

`lamina_{i+14}` - Together lamina_{i+14} and lamina_{i+15} for an if statement. Lamina_{i+14} uses the concat function to create a character string that enters the dimensionless number "yspace" if `num_{bafflecols}` is less that 1.

`lamina_{i+15}` - Enters "" into the command line if the condition in lamina_{i+14} is not forfilled.