doppler_effect.m
The doppler_effect.m function takes an input signal and shifts the pitch of the signal downwards, relative to the input arguments. It then resamples the signal then converts it to a stereo a stereo output regardless if the input is mono.

Syntax

$[\text{stereoOut f}\_\text{coeff}] = \text{doppler_effect}(\text{input, v, y0,fs});$

Description
Input signal should be imported as a variable to be processed. This function does not import any .wav files. Once the input signal has been imported the input arguments fs and input of the function call will be governed by the input arguments.

Input

- **Input** = The input signal that is to be processed.
- **v** = The speed of the moving sound source.
- **y0** = Distance between the observer and the sound source.
- **fs** = Sample rate. (Will already be defined when file is imported)

Output
The output is a variable labeled ‘ans’. To hear the output file use the following command

```
sound(ans,fs);
```

Process
Function uses re-sampling to perform a downward pitch to the input signal as shown in the schematic below.

![Diagram](image)
Output

The output of the output is a variable ‘ans’ Matlab file which needs to be converted to a .wav file with following command. `wavrite(ans,fs,’doppler_siren’.wav)`. Below is a plot with the input signal and out signal with parameters at input = siren v = 80 y = 40 fs = 44100.

![Input signal x[n]](image1)

![Output signal yn] (image2)

References

MATLAB Code

Username: Ziko “Doppler Effect – How if Possible
Student Daniel Fernandez – dopplerDF.m

Publications