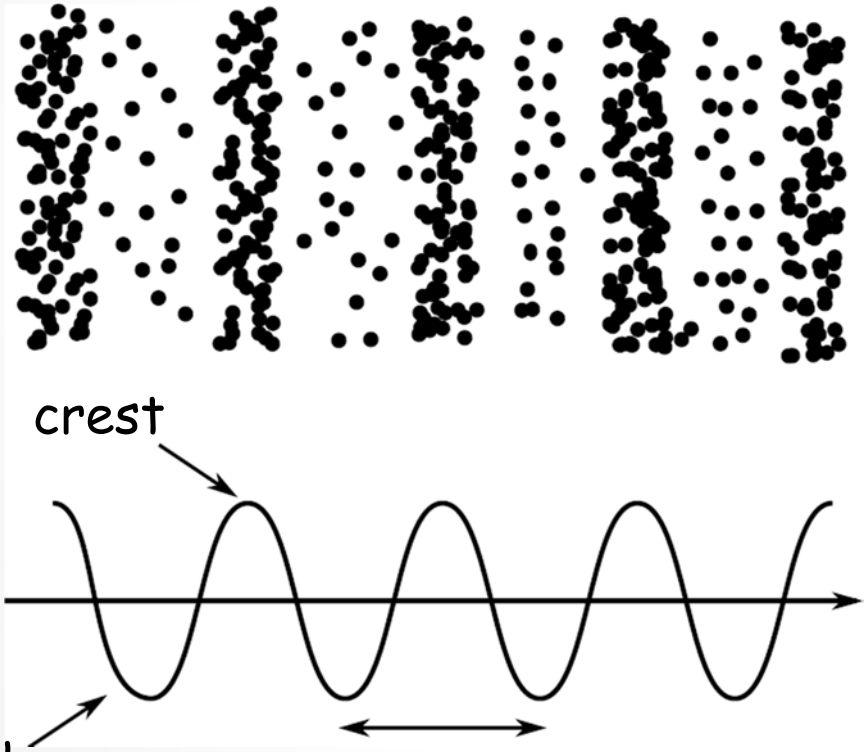
What is Sound ?

Series of **Compressions** and **Rarefactions**

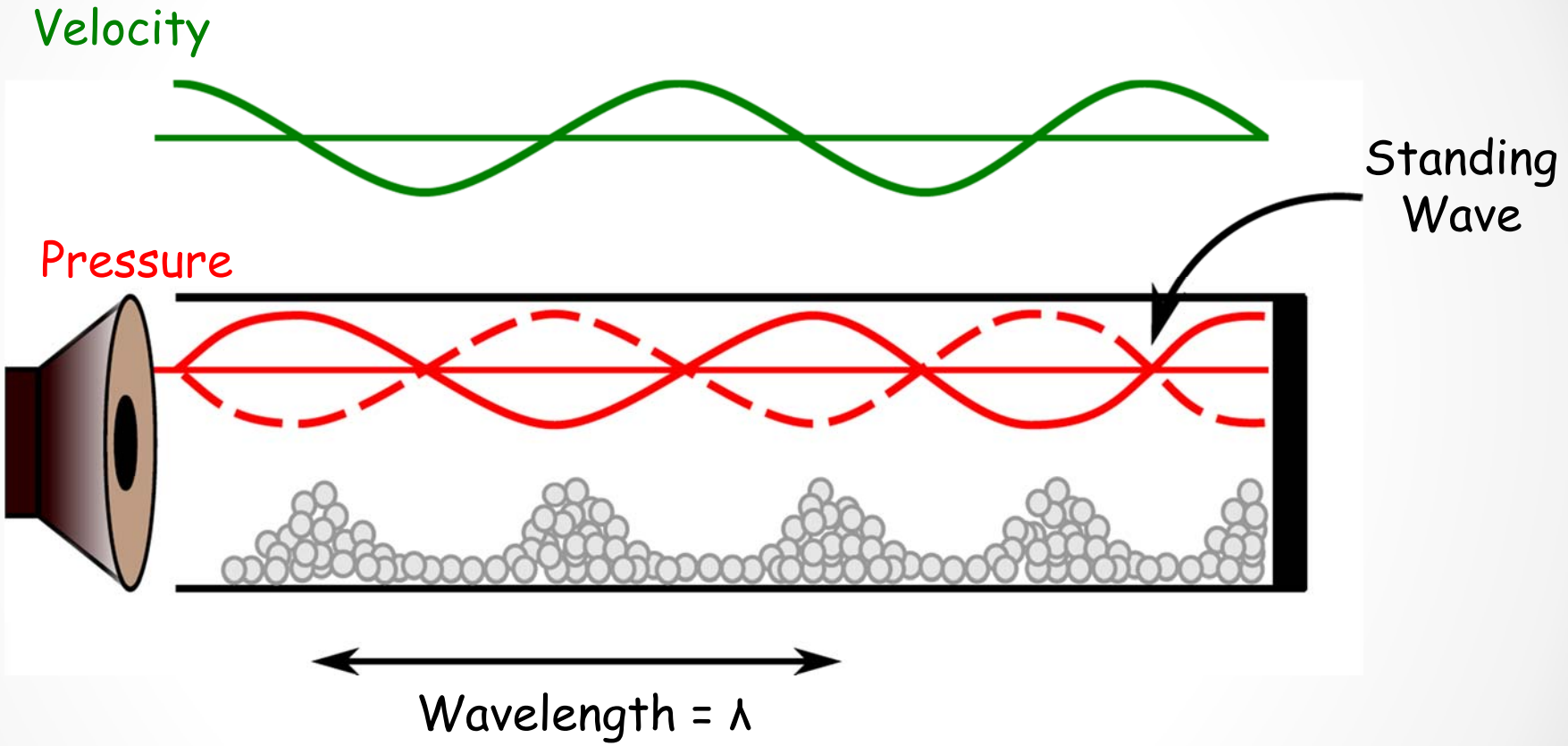


Speed of sound = c (m/s)

Frequency ➡

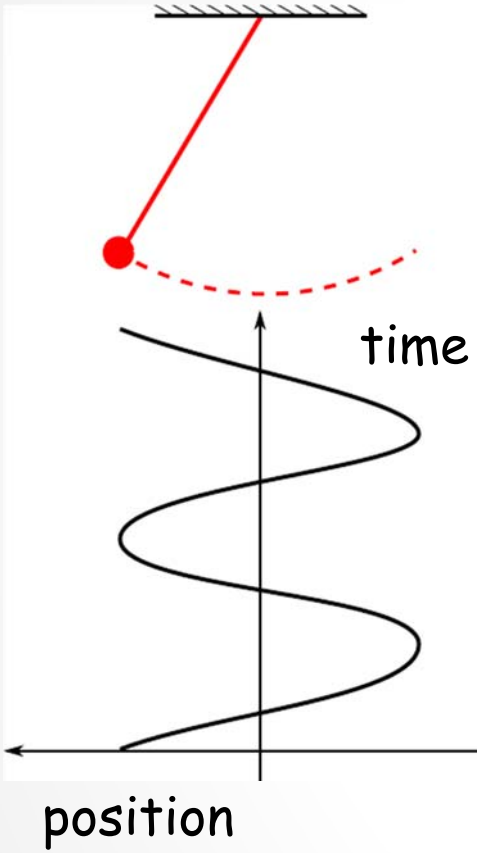
$f = c / \lambda$ (Hz)

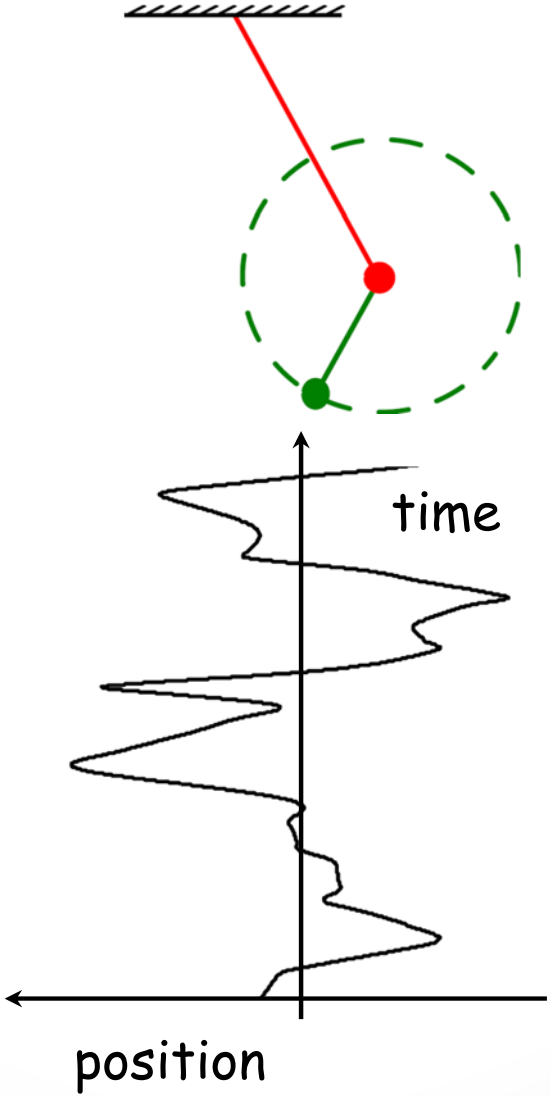
Sound inside a Duct

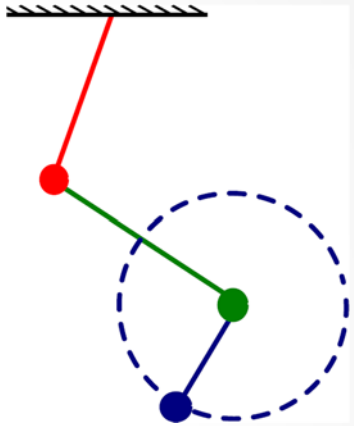


Kundt's Tube

Oscillations



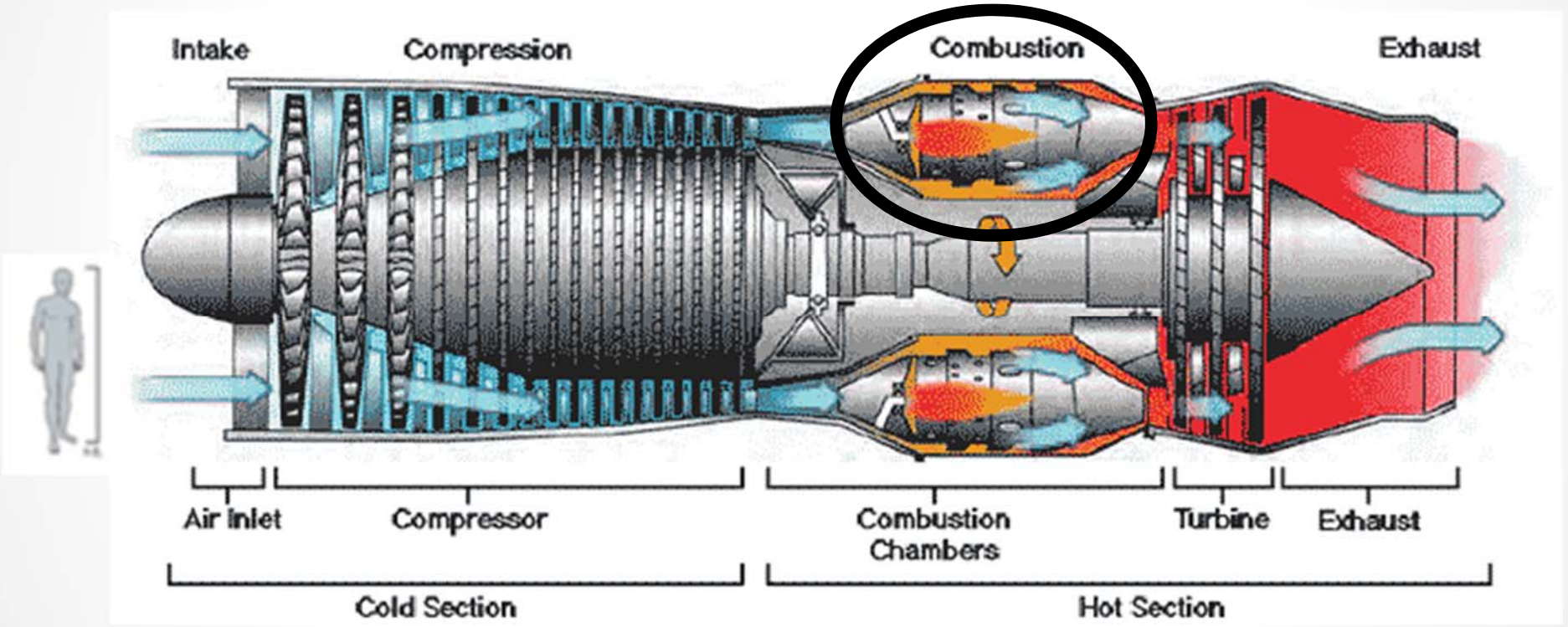




?

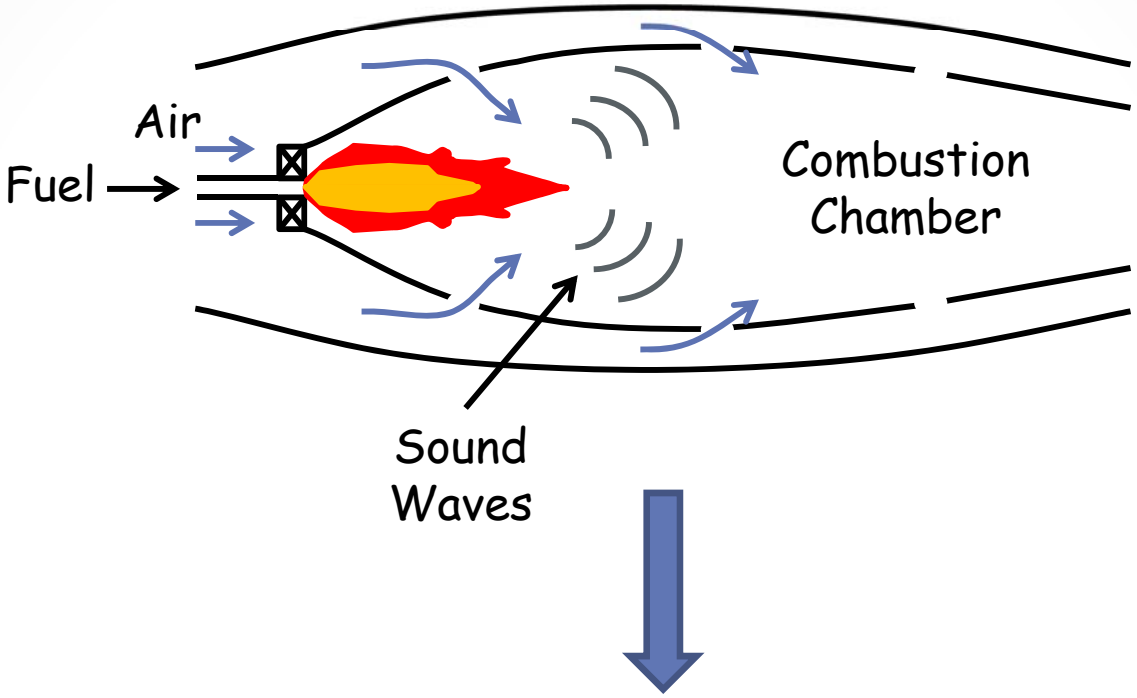
Outcome
Unpredictable

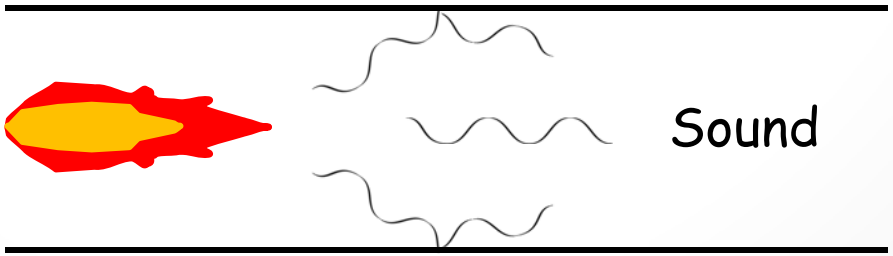
Gas Turbine Engine



Courtesy: Federal Aviation Administration, via Wikimedia Commons

Combustor

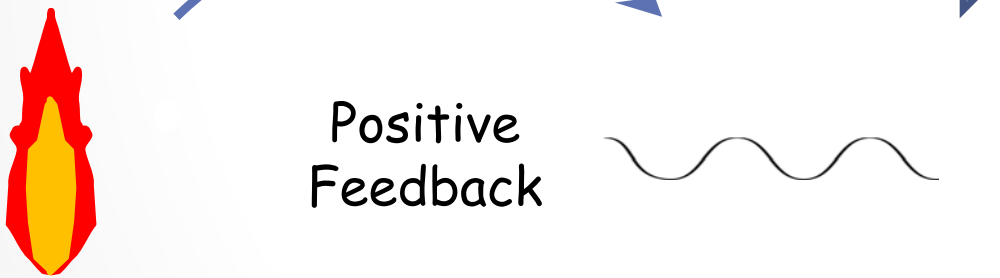




Combustor

Instability

"feeds" energy into

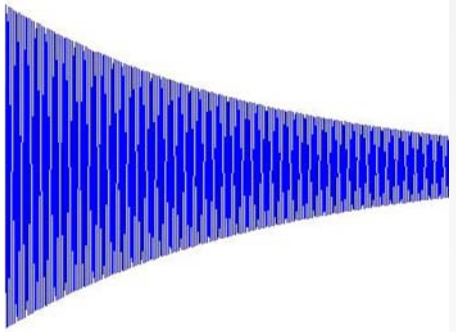


Positive Feedback

Flame

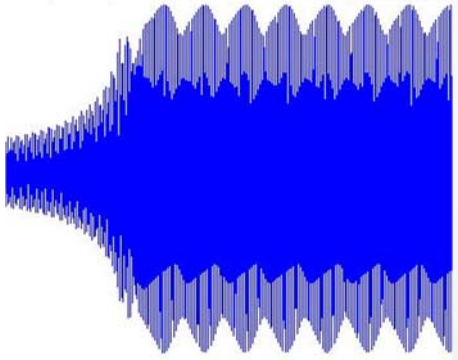
Sound

"helps" energy production



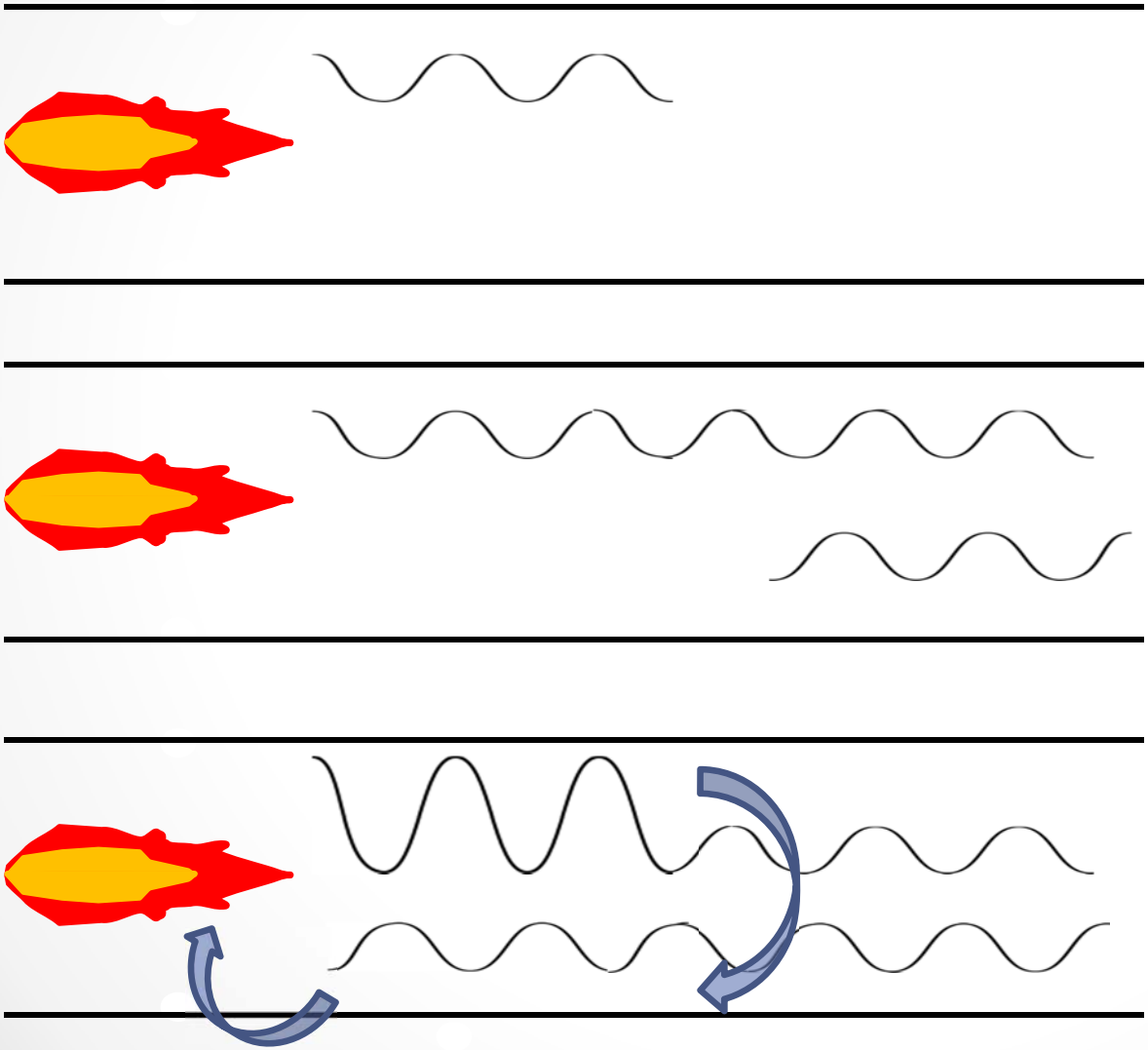
Stable pressure plot

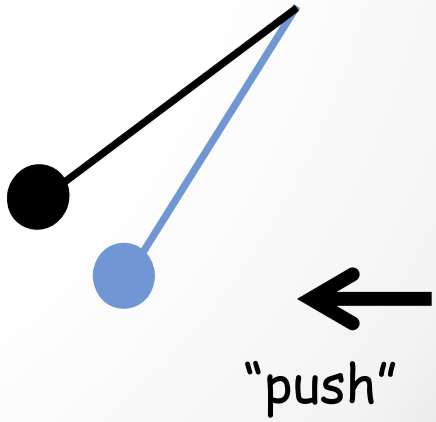
Results in high amplitude oscillations !



Unstable pressure plot

Combustor





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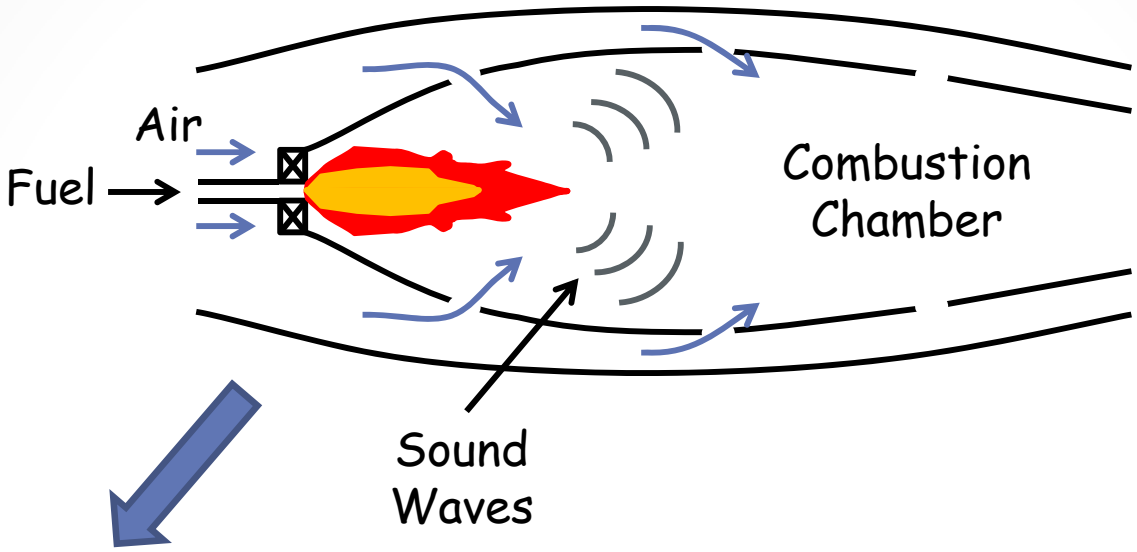

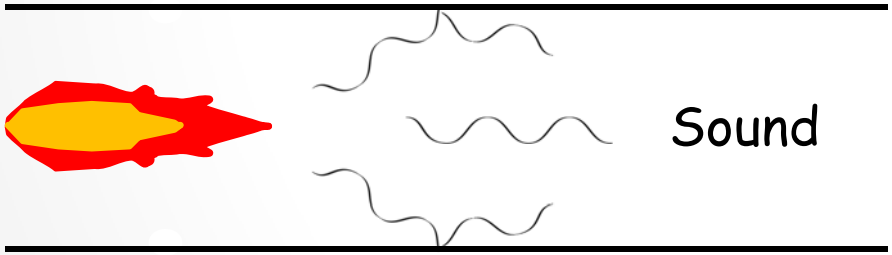

- Multiple reflections
- Multiple frequencies
- Amplitude changes with time
- Outcome unpredictable

COMPLEX !!!