

# Laser Microphone

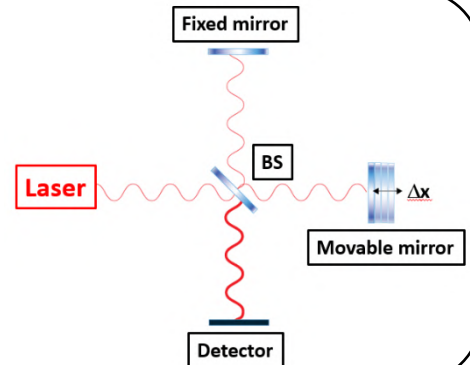


## Spying

- Spying has existed since ancient times in all civilizations and is continued by all large nations today
- It is the act of obtaining secret or confidential information **without** the permission of the holder
- Is described as one of the most dangerous jobs in the world

## The Michelson Interferometer

- Is a device that reads the **interference** between two different superimposed electromagnetic waves
- The light going **into** the system is the same and is separated into two different paths of the device using a beam splitter
- One path remains **fixed**, while the other experiences **change**
- When light from the two paths come back together at the detector, we can read how they **interfere**

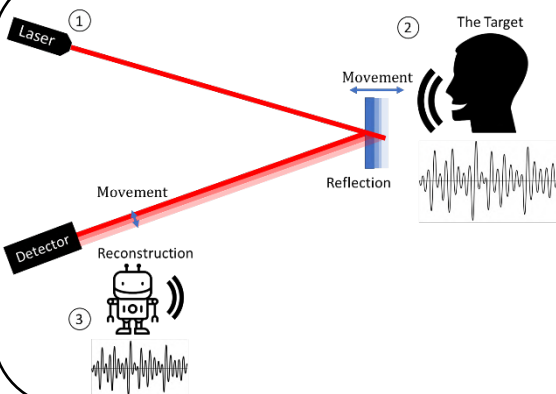


## Question

- Can we use the principle behind the Michelson Interferometer to spy on someone?



## Answer



- Yes! By reflecting a laser off a smooth surface, such as a window, at an angle it is possible to listen in on what people are saying
- When people talk, they create a sound wave which vibrates through the air at a certain frequency
- This wave can also vibrate materials, like our window, and change the path of the reflected laser beam
- We can read this vibration as a change of intensity on the detector, and can recreate the original sound wave

## Conclusion

- We have created a surveillance device that can allow us to replicate sounds from a distance.
- This method can allow us to eavesdrop with minimal chance of exposure, making one of the most dangerous jobs on earth a little bit safer

