
2. Noise

Hans Jordens, Universiteit Groningen

9 points

In the northern part of the Dutch province Groningen, extensive research is done to noise caused by F16's. The terrain where the investigation takes place, is open. At a certain moment, the F16 is spotted, flying at constant height towards the observers. Directly after seeing the F16, a recording device is turned which measures the spectrum of sound during a period of time. The frequency of the loudest tone is shown in the graph, as a function of time. The minimum height at which an F16 is allowed to fly, is known to be 1000 ft. We neglect the absorption of sound.

The following is known:

The speed of sound through air is 343ms^{-1}

$1\text{ft} = 0.3048\text{m}$

Determine, using the data in graph 2.1

1. The speed of the F16,
2. The frequency of the loudest tone in the recorded spectrum,
3. Whether or not the F16 flies above 1000 ft,
4. The horizontal distance at which the F16 was first noticed.

Please clarify how you calculate your results.

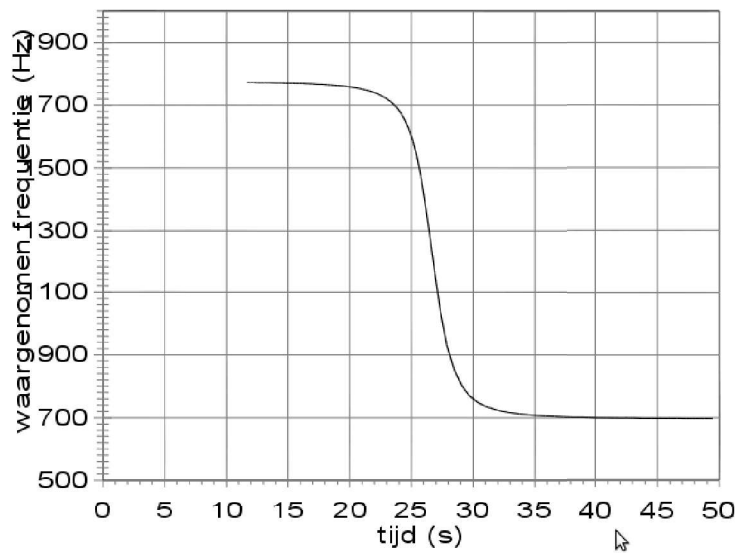


Figure 2.1: The recorded frequency (Hz) as a function of time (s)