Acoustic Phonetics

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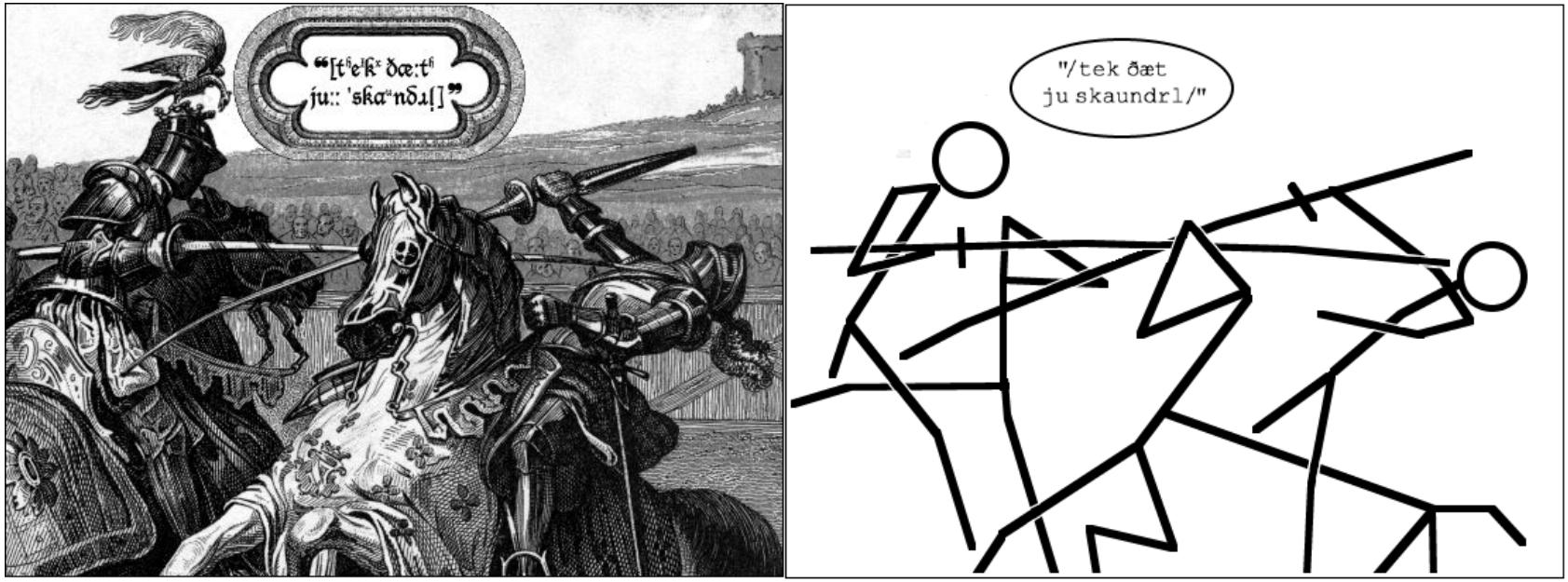
презентация доступна: **https://goo.gl/knlxyM**

About course

- Here is a course website.
- Here is a course program.
- We expect some theoretical knowledge
  - read 2. chapter from [Gussenhoven, Jacobs 2013]
  - be able to use IPA symbols
- We expect some basic R skills:
  - import .csv files to R
  - dplyr, ggplot2

Phonetics?...



Phonetics Phonology

from http://specgram.com/CLIII.1/09.parenchyma.cartoon.e.html

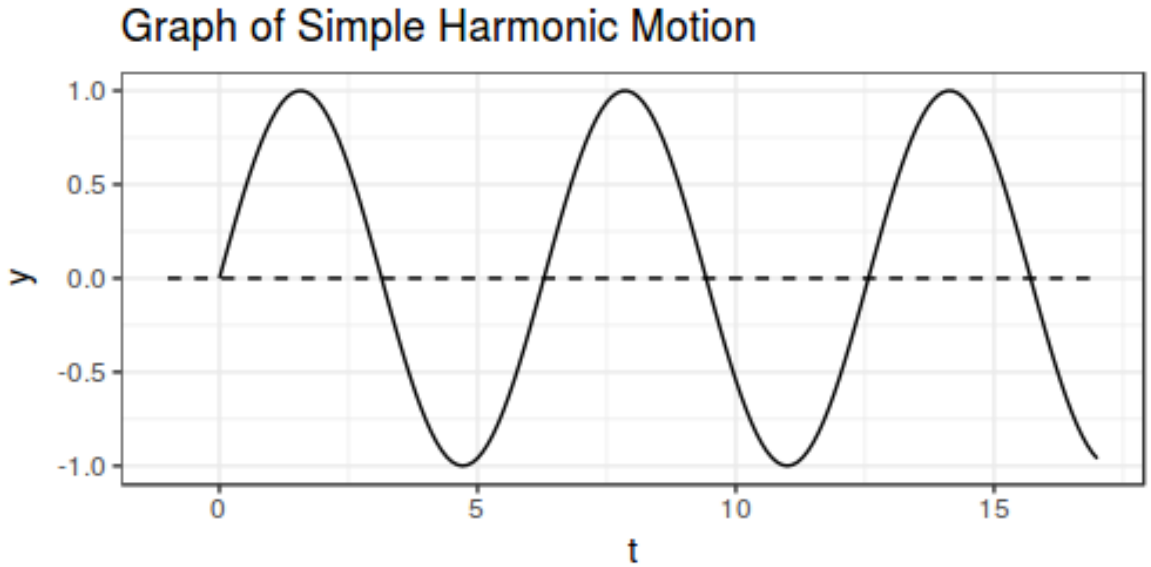
Phonetics is generally assumed to be a subfield that deal with **articulatory**, **acoustic** and **perceptional** aspects of phonological units. Phonology and phonetics together are supposed to describe organization of sounds in languages.

Simple Harmonic Motion

Periodic Motion is any type of motion that repeats itself after successuve equal time intervals.

Simple Harmonic Motion is specific type of periodic motion that arises from

- existence of some **equilibrium position** for a described object;
- **linear restoring force** that tending to pull the described object back to its equilibrium position.



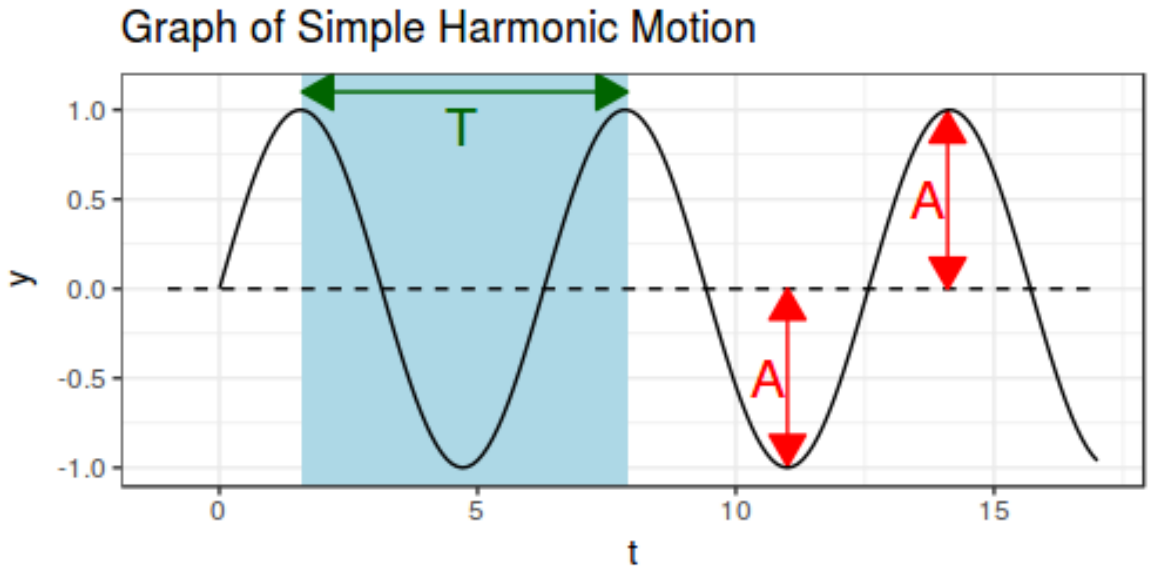
Simple Harmonic Motion

Amplitude is the maximum displacement of the equilibrium position.

Period (T) is the duration of time of one cycle in a repeating event. (s)

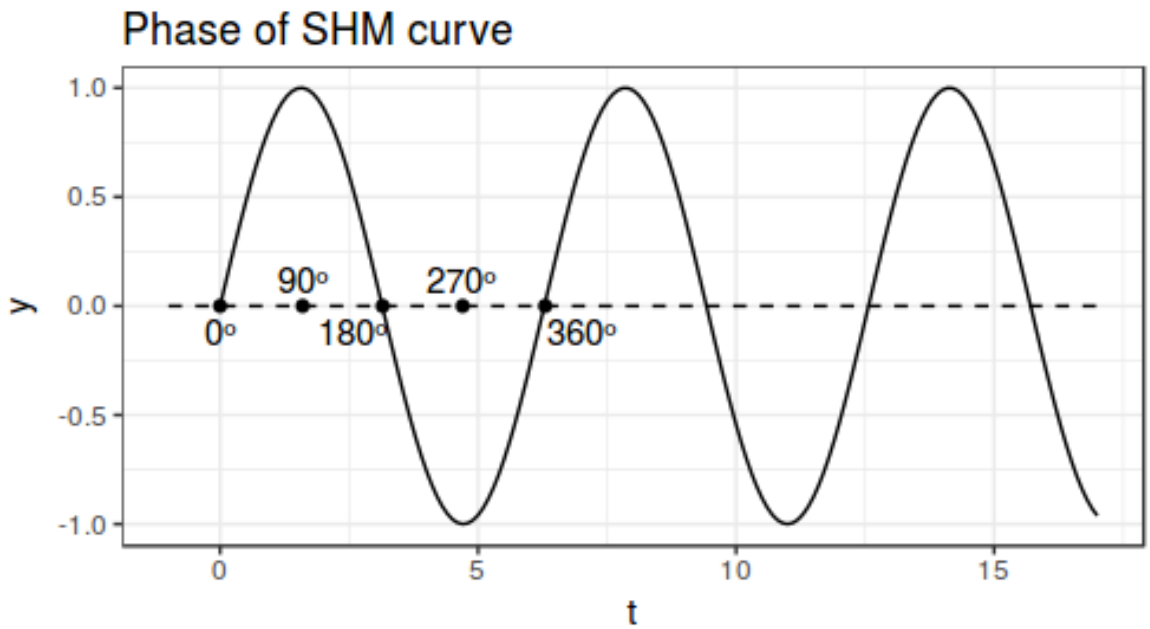
Frequency (f) is the number of period (cycles) per second. (Hz)

$$f = \frac{1}{T} \qquad T = \frac{1}{f}$$

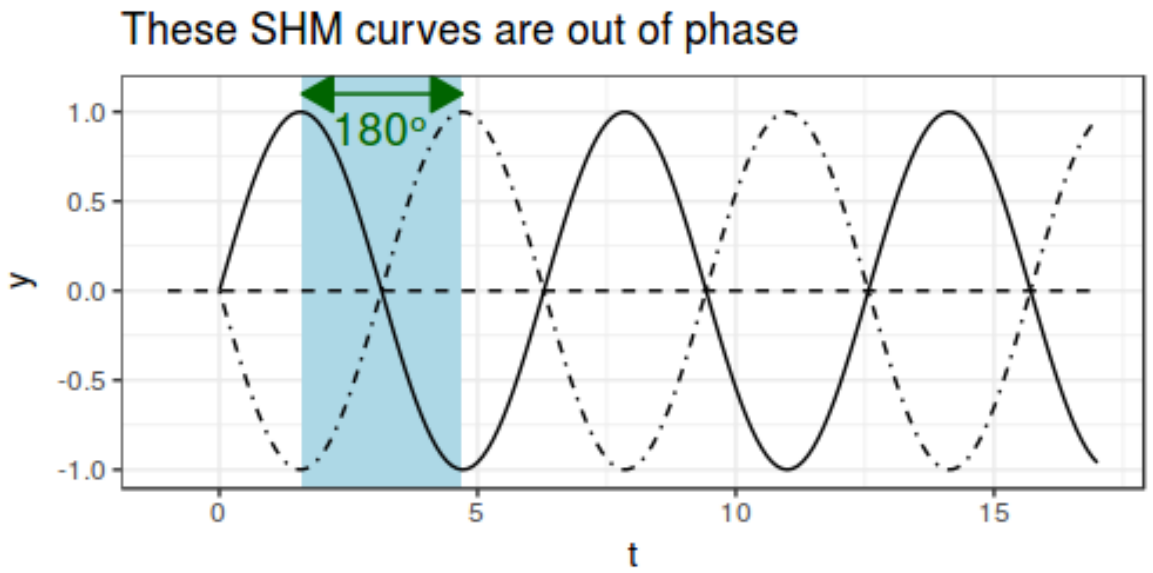


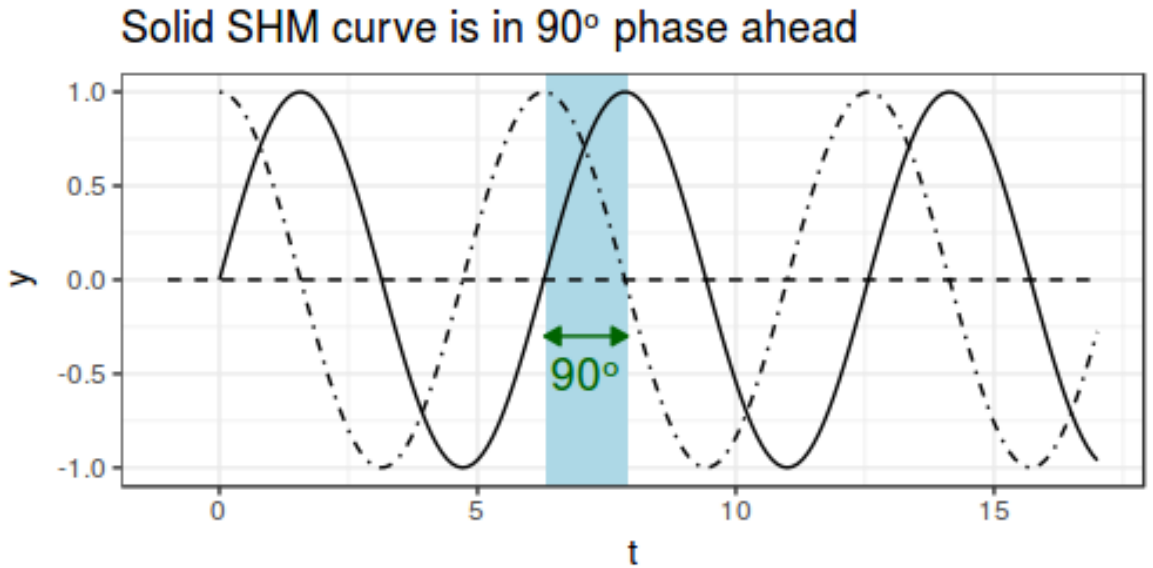
Phase of SHM

One period of SHM can be devided into 360^0 of **phase φ.**



SHMs comparison





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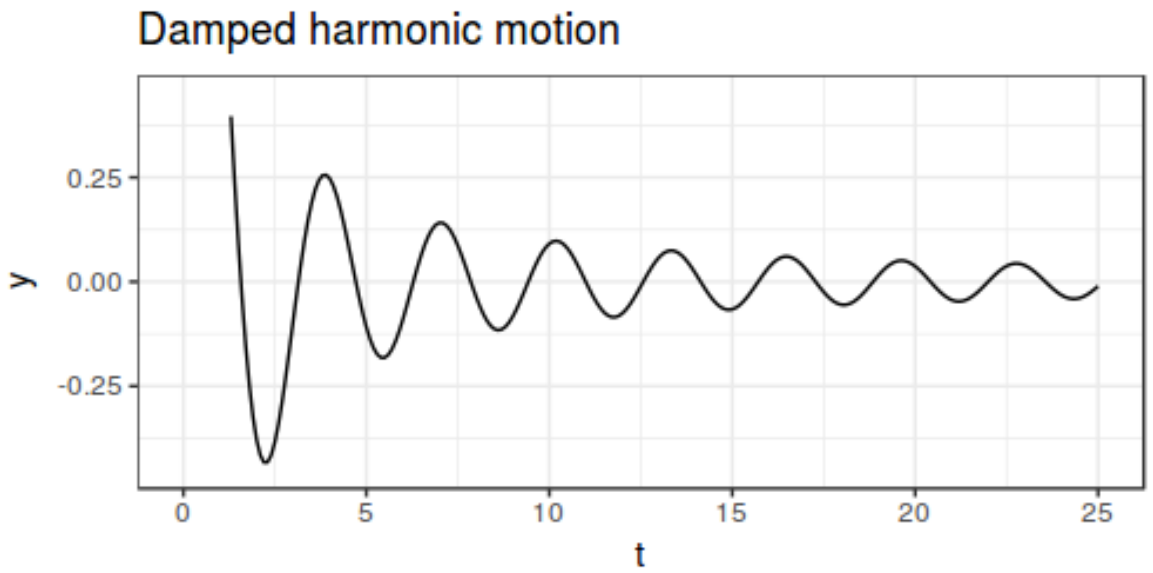
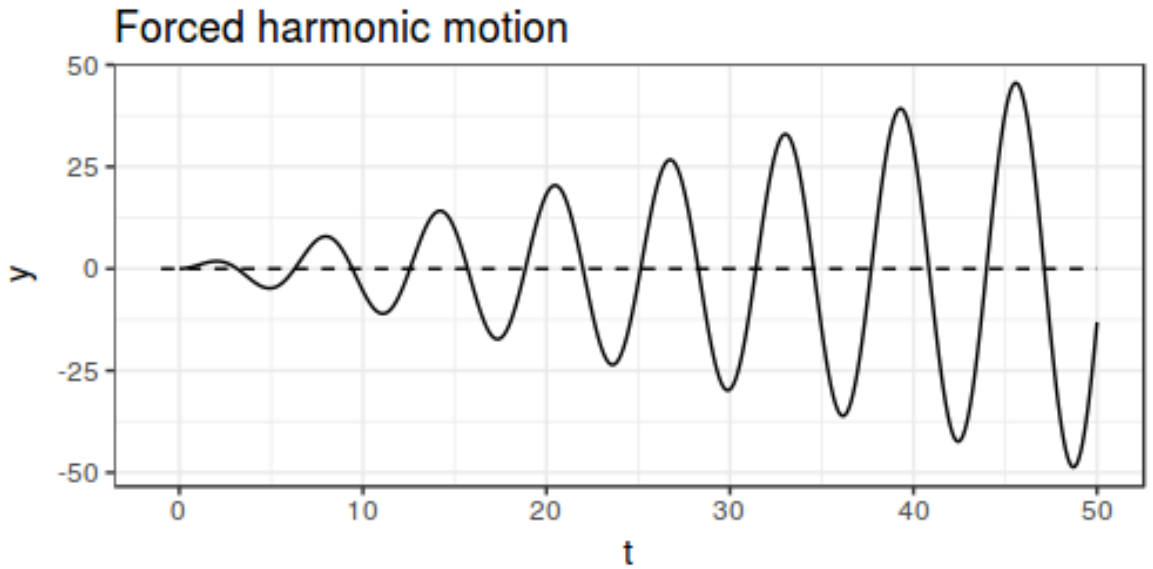
Harmonic motion





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Harmonic motion

Harmonic motions are closely related with the phenomena of **resonance** and **antiresonance**.

Resonance is a phenomenon in which a vibrating system or external force drives another system to oscillate with greater amplitude at specific frequencies.

Antiresonance is a phenomenon in which a vibrating system or external force drives another system to oscillate with smaller amplitude at specific frequencies.

Sound as SHM

We can correlate the physical properties of sound waves with our perception:

- We perceive changes in frequency as **pitch**
- We perceive changes in amplitude as **loudness**

Thank you!

Please, don't hesitate to write me

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Reference I

Gussenhoven, Carlos, Haike Jacobs (2013). Understanding Phonology Hodder Education. Hodder Arnold.