

Series 12 (20 May 2025)

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Chapter 26 : Transfer of Pressure

Exercise 26.1

Consider the wave propagation in a simple model of the aorta (see below) constituted of a tube of length $L = 0.4$ m, pulse wave velocity $c = 6$ m/s, attenuation coefficient $a \cdot f$ and reflection coefficient $\Gamma = 0.5$, where $a = 0.1$ and $f = \text{frequency}$.

- 1) Calculate the transfer function T .
- 2) Plot the amplitude and phase of T as a function of frequency ($f = 0 \dots 20$ Hz).
- 3) In which frequency does the first maximum of amplitude of T happen?
- 4) How is this frequency related to the pulse wave velocity c and length L of the aorta?

