LP26 – Propagation avec dispersion

AGRÉGATION EXTERNE DE PHYSIQUE-CHIMIE, OPTION PHYSIQUE

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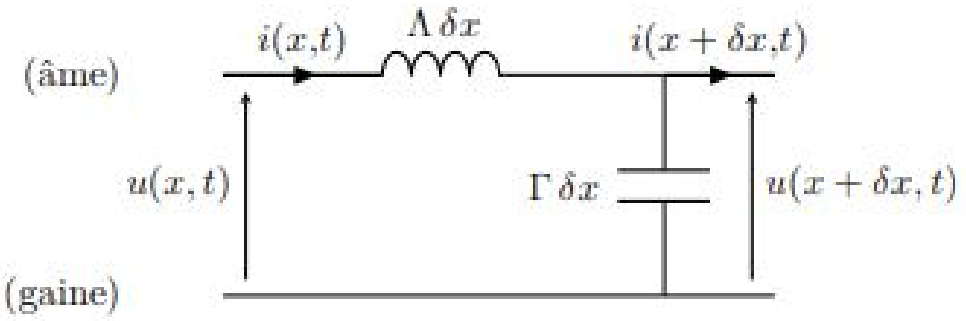
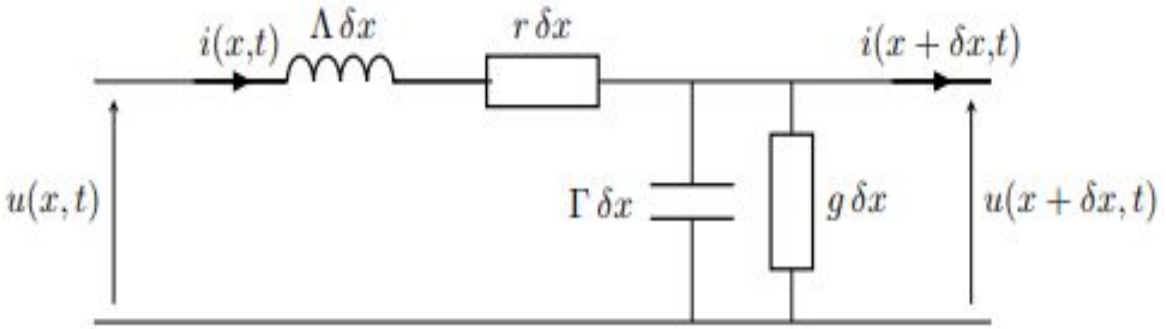
Introduction





$$\frac{\partial i}{\partial x}(x,t) = -\frac{\Gamma \partial u}{\partial t}(x,t) \qquad \frac{\Lambda \partial i}{\partial t}(x,t) = -\frac{\partial u}{\partial x}(x,t)$$

$$\frac{\partial^2 i}{\partial x^2} - \Gamma\Lambda\frac{\partial^2 i}{\partial t^2} = 0 \; et \; \frac{\partial^2 u}{\partial x^2} - \Gamma\Lambda\frac{\partial^2 u}{\partial t^2} = 0$$

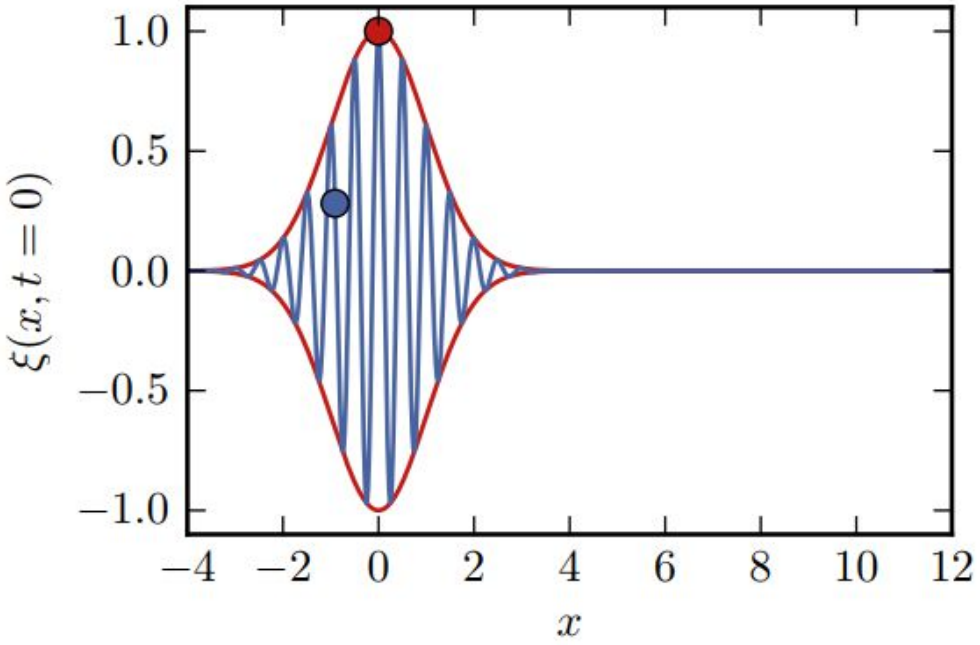
$$\frac{\partial^2 u}{\partial x^2} - \frac{1}{c^2}\frac{\partial^2 u}{\partial t^2} = (\Lambda g + \Gamma r)\frac{\partial u}{\partial t} + r\,g\,u$$

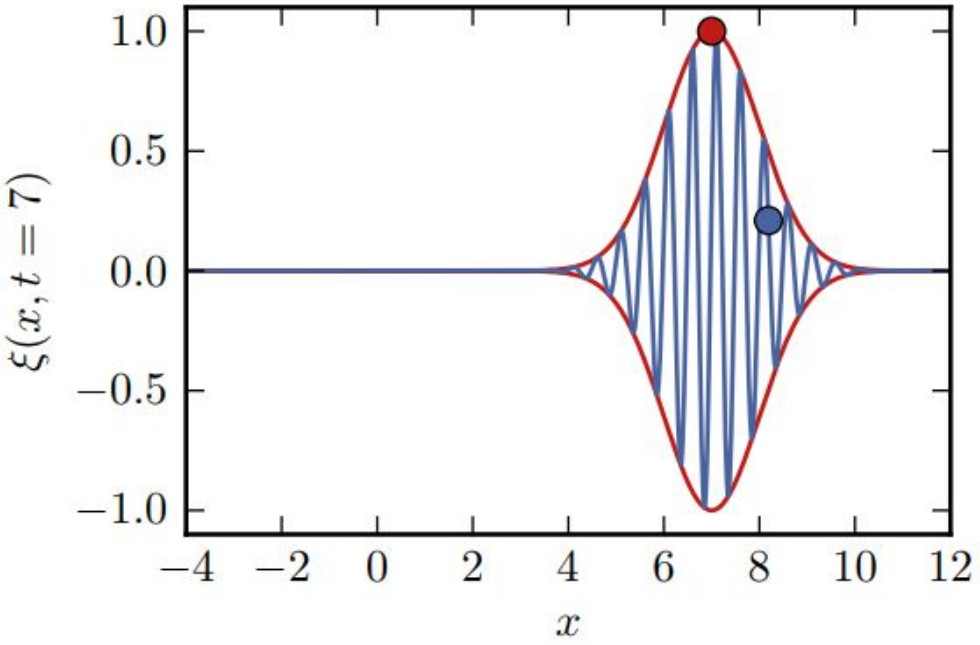
$$k = \frac{\omega}{c}$$

$$k^2 = \frac{\omega^2}{c^2} + i\omega(\Lambda g + \Gamma r) - rg$$

I. Equation de propagation d'une onde de pression.

3. Célérité des ondes acoustiques





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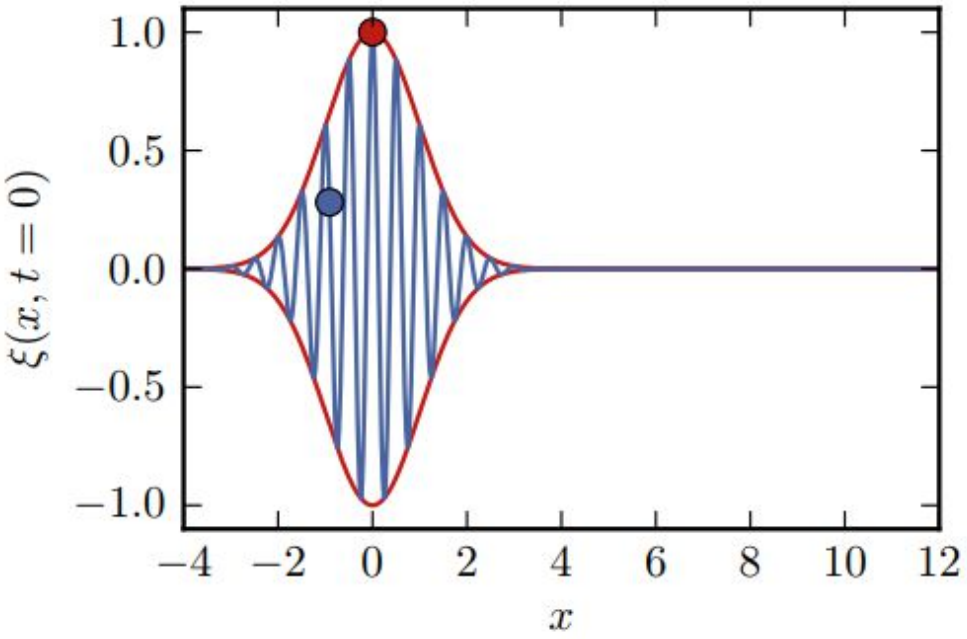
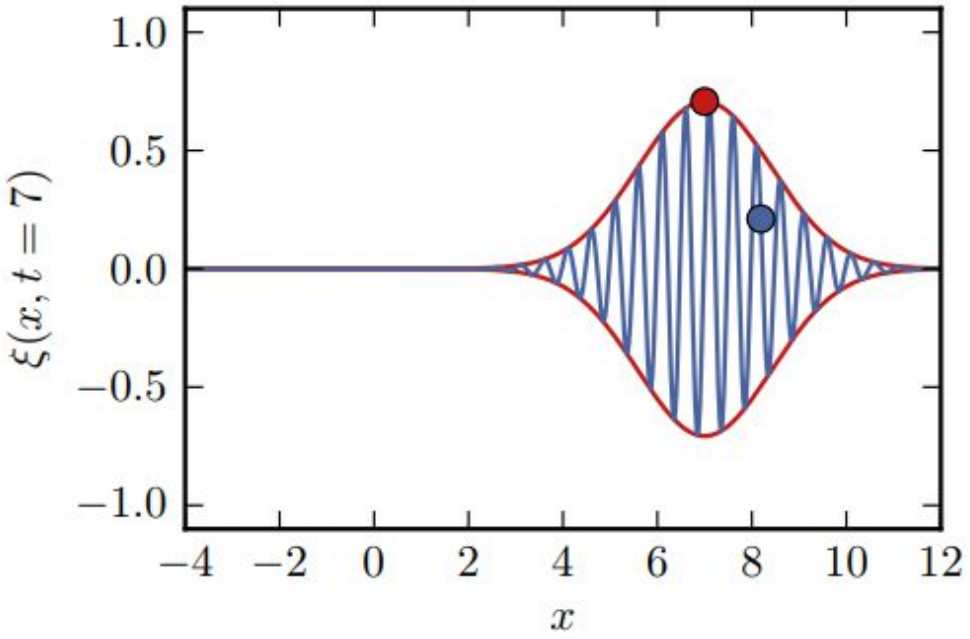
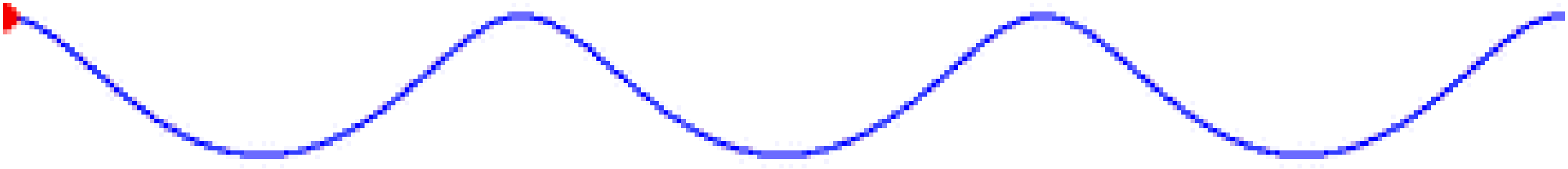
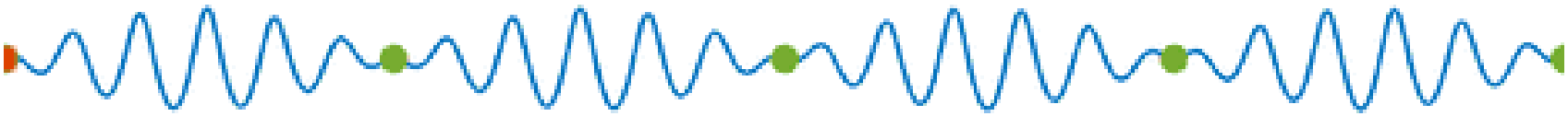
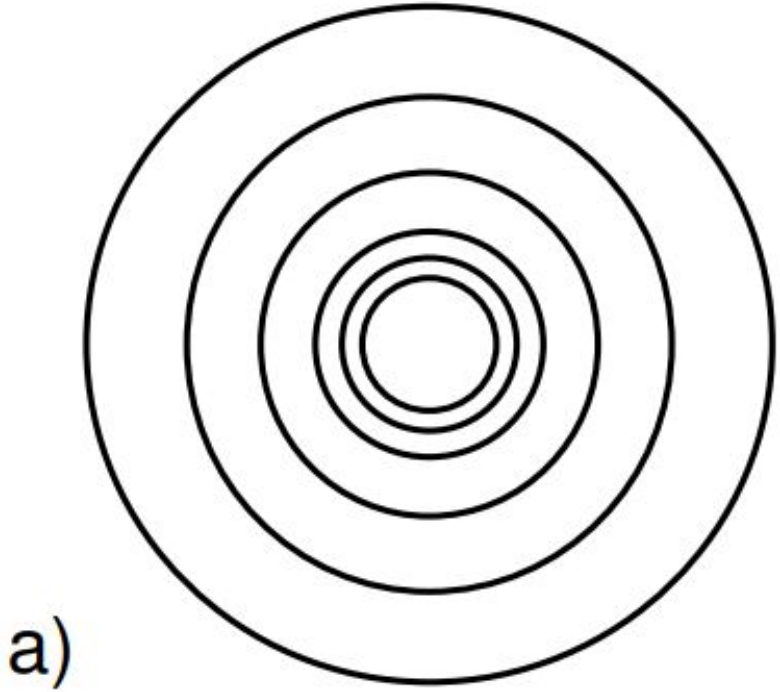


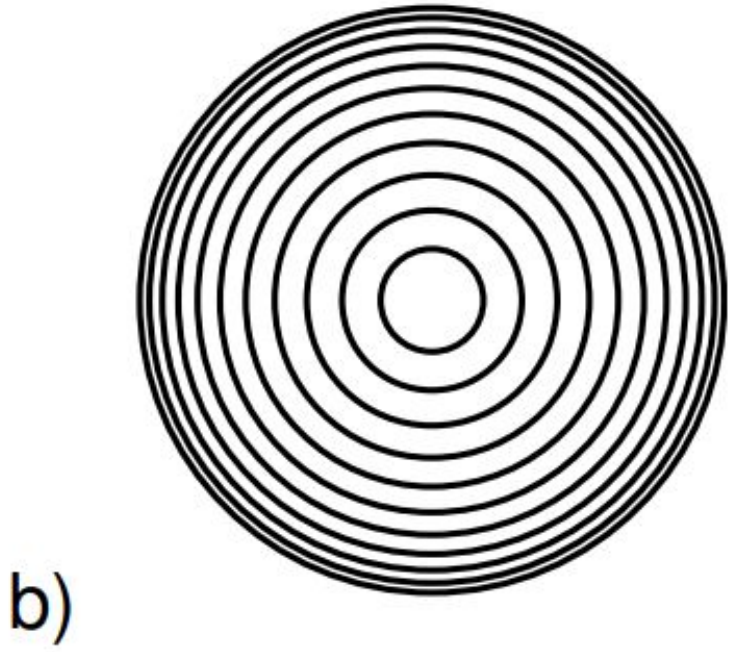


Propagation du paquet d'onde avec dispersion au second ordre (http://www.etienne-thibierge.fr/)






a)


b)