? Sound values - Sound field quantities and Sound energy quantities Questions

German Version: Schallgrößen - Schallfeldgrößen und Schallenergiegrößen http://www.sengpielaudio.com//Schallgroessen-TU.pdf

Source: Collection of exercises from the Department of Communication of the TU Berlin

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F + A

For a progressive plane wave the RMS value of the sound pressure p = 0.05 N/m² or 0.05 Pa is found.

$$Z_0 = \frac{p}{v} = \rho \times c$$

a) What is the particle velocity v? The acoustic impedance $Z_0 = p / v = \rho \times c$ = 413 N·s/m³.

b) What is the particle displacement ξ for the frequencies f = 100 Hz and f = 1000 Hz?

c) What is the sound intensity I?

d) What is the sound power P, passing through an area of A = 4 m?

e) What is the sound pressure level L_p?

f) What is the sound intensity level L_I?

g) What is the sound power level L_W for above calculated sound power?