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Wavelength and Frequency in Optical Media II

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See Unified Absolute Relativity Theory at:

http://www.wbabin.net/saraiva/saraiva105.pdf
http://www.wbabin.net/saraiva/saraiva223.pdf

Fizeau's running water experiment is a proof that Lorentz's equations are valid in optical media.

Lorentz's equations:

$$x = \frac{x_0 - vt_0}{\sqrt{1 - v^2/c^2}} \quad ; \quad f = \frac{cf_0\sqrt{c^2 - v^2}}{c^2 - vw_0} \quad ; \quad w = c^2\frac{w_0 - v}{c^2 - vw_0}$$

$$w_0 = c - \Delta w_0 \; ; \quad v = c - \Delta v$$

⇔

$$x = x_0\frac{\Delta v - \Delta w_0}{\sqrt{2c\Delta v}} \quad ; \quad f = f_0\frac{\sqrt{2c\Delta v}}{\Delta v + \Delta w_0}$$

$$\Delta v = \frac{n+1}{n-1}\Delta w_0 \; ; \quad \Delta w_0 = \frac{kf_0^{\;2}}{2c}$$

⇔

$$x = \frac{\sqrt{k}}{\sqrt{n^2 - 1}} \quad ; \quad f = \frac{c\sqrt{n^2 - 1}}{n\sqrt{k}}$$

$$k = 1.9\times10^{-34}m^2; \quad f_M = \frac{c}{\sqrt{k}} = 2.17\times10^{25}Hz$$

$w = xf = c/n$; n – Refractive index

Imaginary frequencies are from longitudinal waves with speeds greater than light speed.

$$w = \sqrt{c^2 - kf^2} = c/n$$