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On the Doppler principle.

By W. Voigt.

The differential equations for the oscillations of an elastic, incompressible medium are, as everyone knows:

$$\begin{aligned} \frac{\partial^2 u}{\partial t^2} &= \omega^2 \Delta u \\ \frac{\partial^2 v}{\partial t^2} &= \omega^2 \Delta v \\ \frac{\partial^2 w}{\partial t^2} &= \omega^2 \Delta w \end{aligned} \tag{1}$$

where ω indicates the velocity of propagation of the oscillations — more precisely the velocity of propagation of a plane wave with constant amplitude. Moreover, it is also supposed that u, v and w satisfy the relation:

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0\,. \tag{1'}$$