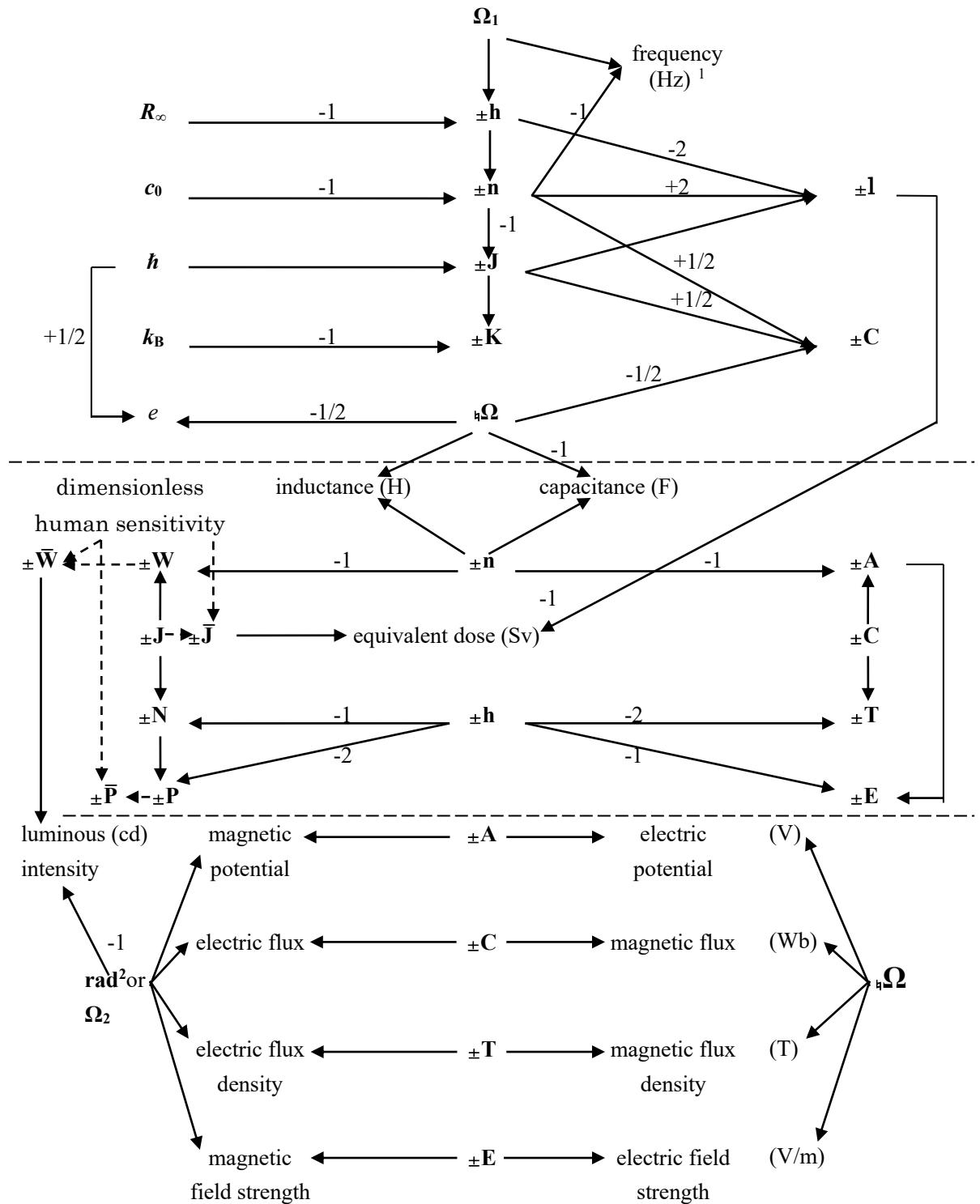


E. Relation of Units and Dimensions



¹ The units enclosed with '()' are units of SI.

Force between electrical quantities

$$f = \frac{1}{\epsilon_0} \frac{\Omega_2 Q}{4\pi r^2} Q' = \Omega_n c_0 \frac{QQ'}{r^2}$$

Force between electrical currents

$$df = \mu_0 \frac{\Omega_2 I}{2\pi r} I' = \frac{2\Omega_n}{c_0} \frac{II'}{r}$$

Lorentz force

$$\mathbf{F} = Q(\mathbf{E} + \mathbf{v} \times \mathbf{B})$$

Energy density of an electromagnetic field

$$u = \frac{1}{2\Omega_2} (\mathbf{E} \cdot \mathbf{D} + \mathbf{H} \cdot \mathbf{B})$$

Poynting vector

$$\mathbf{S} = \frac{1}{\Omega_2} \mathbf{E} \times \mathbf{H}$$

Electromagnetic induction law

$$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t}$$

$$\nabla \times \mathbf{H} = +\frac{\partial \mathbf{E}}{\partial t} + \Omega_2 \mathbf{J}$$

Gauss' theorem (differential form)

$$\left\{ \begin{array}{l} \nabla \cdot \mathbf{D} = \Omega_2 \rho \\ \nabla \cdot \mathbf{B} = 0 \end{array} \right.$$

Charge conservation law

$$\nabla \cdot \mathbf{J} + \frac{\partial \rho}{\partial t} = 0$$

Scalar potential

$$\mathbf{E} = -\nabla \phi - \frac{\partial \mathbf{A}}{\partial t}$$

Vector potential

$$\mathbf{B} = +\nabla \times \mathbf{A}$$

Equation that satisfies the potential

$$\left\{ \begin{array}{l} \Delta \phi - \epsilon_0 \mu_0 \frac{\partial^2 \phi}{\partial t^2} = -\Omega_2 \frac{\rho}{c_0} \\ \Delta \mathbf{A} - \epsilon_0 \mu_0 \frac{\partial^2 \mathbf{A}}{\partial t^2} = -\Omega_2 \mu_0 \mathbf{J} \end{array} \right.$$

Constant $\approx \Omega_0^n \times 12^m$, where $n \in \{0, \pm 1\}$, $m \in \mathbb{Z}$

