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	$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t}$
	$\nabla \times \mathbf{H} = +\frac{\partial \mathbf{D}}{\partial t} + \Omega_2 \mathbf{J}$
Gauss' theorem (differential form)	$\begin{cases} \nabla\cdot\mathbf{D} = \Omega_2\rho \\ \nabla\cdot\mathbf{B} = 0 \end{cases}$
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	$\begin{cases} \Delta\phi - \epsilon_0\mu_0\frac{\partial^2\phi}{\partial t^2} = -\Omega_2\frac{\rho}{\epsilon_0} \\ \Delta\mathbf{A} - \epsilon_0\mu_0\frac{\partial^2\mathbf{A}}{\partial t^2} = -\Omega_2\mu_0\mathbf{J} \end{cases}$

B.4 Relationships among the dimensions of electromagnetic quantities

By performing a dimension analysis based on the set of equations described above, a diagram that illustrates the relations among the dimensions of the electromagnetic quantities can be constructed (Figure 1). The quantities that are related to 'charge' lie in the middle, with the quantities that are related to electric 'field' and magnetic 'field' arranged symmetrically on either side. Also impedance and solid angle take on symmetrical roles in generating the 'field' quantities from the 'charge' quantities. The concepts that are to be distinguished are arranged so that their dimensions are all mutually different, and the electromagnetic quantities, which are complex at first sight, are seen to be orderly and systematic.

A result of the dimension analysis is that the magnetic potential equals the product of the electrical current and solid angle, as shown in Figure 1. The geometrical grounds for that are explained below.(11)

Assuming that.

1. the principle of superimposition is established for the magnetic potential and
2. the magnetic potential is 0 when a circuit is seen directly from the side,

the magnetic potential at viewpoint O in Figure 2 is the sum of the magnetic potentials due to the three sides, which is to say 0. On the other hand, this is also the sum of the magnetic potentials due to circuit ABC and circuit FED.

Accordingly, we can say that the magnetic potential due to a triangular circuit is proportional to the product of the current that is flowing in the circuit and the solid angle that the circuit makes. Because any circuit can be represented by a combination of triangles, the same is also true for any circuit.

The solid angle made by one trip around the circuit from the viewpoint varies only with Ω_2. n trips around a one-turn circuit and one trip around an n-turn circuit are equivalent in terms of phase geometry, so the 'turn' of ampere-'turn' can be regarded as Ω_2.