The magnetic flux produced by the current in each phase can be represented by the equations given below. This is a similar representation of current is a three-phase system as the flux is cophasial with the current.

$$\phi_R = \phi_m \sin(\omega t)$$

$$\phi_Y = \phi_m \sin(\omega t - 120^o)$$

$$\phi_B = \phi_m \sin(\omega t - 240^o)$$

Where, $\varphi_R$, $\varphi_Y$ and $\varphi_B$ are the instantaneous flux of corresponding Red, Yellow and Blue phase winding, $\varphi_m$ amplitude of the flux wave. The flux wave in the space can be represented as shown below.

Now, on the above graphical representation of flux waves, we will first consider the point 0.

Here, the value of $\varphi_R$ is $\phi_R = \phi_m \sin(0) = 0$

The value of $\varphi_Y$ is

$$\phi_Y = \phi_m \sin(0 - 120^o) = \phi_m \sin(-120^o) = -\frac{\sqrt{3}}{2}\phi_m$$

The value of $\varphi_B$ is

$$\phi_B = \phi_m \sin(0 - 240^o) = \phi_m \sin(-240^o) = \frac{\sqrt{3}}{2}\phi_m$$

The resultant of these fluxes at that instant ($\varphi_r$) is $1.5\varphi_m$ which is shown in the figure below.

Now, on the above graphical representation of flux waves, we will consider the point 1, where ωt = π / 6 or $30^{\circ}$.

Here, the value of $\varphi_R$ is

$$\phi_R = \phi_m \sin(30^0) = \frac{1}{2}\phi_m$$

The value of $\varphi_Y$ is

$$\phi_Y = \phi_m \sin(30^o - 120^o) = \phi_m \sin(-90^o) = -\phi_m$$

The value of $\varphi_B$ is

$$\phi_B = \phi_m \sin(30^o - 240^o) = \phi_m \sin(-210^o) = \frac{1}{2}\phi_m$$

The resultant of these fluxes at that instant ($\varphi_r$) is $1.5\varphi_m$ which is shown in the figure below. here it is clear thet the resultant flux vector is rotated $30^{\circ}$ further clockwise without changing its value.

Now, on the graphical representation of flux waves, we will consider the point 2, where ωt = π / 3 or $60^{\circ}$.

Here, the value of $\varphi_R$ is

$$\phi_R = \phi_m \sin(60^o) = \frac{\sqrt{3}}{2}\phi_m$$

The value of $\varphi_Y$ is

$$\phi_Y = \phi_m \sin(60^o - 120^0) = \phi_m \sin(-60^o) = -\frac{\sqrt{3}}{2}\phi_m$$

The value of $\varphi_B$ is

$$\phi_B = \phi_m \sin(60^o - 240^0) = \phi_m \sin(-180) = 0$$

The resultant of these fluxes at that instant ($\varphi_r$) is $1.5\varphi_m$ which is shown in the figure below. here it is clear thet the resultant flux vector is rotated 30° further clockwise without changing its value.

Now, on the graphical representation of flux waves, we will consider the point 3, where ωt = π / 2 or 90°.

Here, the value of $\varphi_R$ is

$$\phi_R = \phi_m \sin(90^o) = \phi_m$$

The value of $\varphi_Y$ is

$$\phi_Y = \phi_m \sin(90^o - 120^o) = \phi_m \sin(-30^o) = -\frac{1}{2}\phi_m$$

The value of $\varphi_B$ is

$$\phi_B = \phi_m \sin(90^o - 240^o) = \phi_m \sin(-150^o) = -\frac{1}{2}\phi_m$$

The resultant of these fluxes at that instant ($\varphi_r$) is 1.5$\varphi_m$ which is shown in the figure below. here it is clear thet the resultant flux vector is rotated 30° further clockwise without changing its value.

In this way we can prove that the due to balanced supply applied to the three pfase stator winding a rotating or revolving magnetic fiels is established in thew space.