Given a vector $\vec{A}$. We can write this as $\vec{A} = A_x \hat{x} + A_y \hat{y}$ where $A_x = \vec{A} \cdot \hat{x}$ and $A_y = \vec{A} \cdot \hat{y}$

Let $f(\theta, \phi)$ be a function in angular coordinates. We can write this as an expansion in terms of the basis set of spherical harmonic functions, $Y_l^m(\theta, \phi)$ as

$$f(\theta, \phi) = \sum_{l,m} a_{lm} Y_l^m(\theta, \phi)$$

where

$$a_{lm} = \int_{\theta, \phi} Y_l^{m*}(\theta, \phi) f(\theta, \phi) \sin\theta \, d\theta \, d\phi$$

To calculate C_l, we define

$$C_l = \frac{1}{2l+1} \sum_m |a_{lm}|^2$$

where $-l \leq m \leq l$