Total energy of the system is

$$F[\vec{m}(\vec{r})] = \int \mathcal{F}(\vec{m}(\vec{r}))d^3r \tag{1}$$

Where

$$\mathcal{F}(\vec{m}(\vec{r})) = \frac{J_2}{4!}(\nabla\vec{m})^4 - \frac{J_1}{2!}(\nabla\vec{m})^2 + D\vec{m}.((\hat{z}\times\nabla)\times\vec{m}) + Km_z^2 - hm_z \tag{2}$$

So the total energy can be expressed as $F[\vec{m}(\vec{r})] = F_{J_2} + F_{J_1} + F_D + F_K + F_h$. Each terms represents the energy coming from the individual terms in equation (2). The magnetization vector can be expressed as

$$\vec{m}(\vec{r}) = \hat{e}_1 m_1 \cos(\vec{q}.\vec{r}) + \hat{e}_2 m_2 \sin(\vec{q}.\vec{r}) + \hat{e}_3 m_3$$

where $\hat{e}_1$, $\hat{e}_2$ and $\hat{e}_3$ are the unit vector in the new coordinate basis and they are mutually orthonormal to each other. From the normalization condition, we can write $m_3 = \sqrt{1-(m_1\cos(\vec{q}.\vec{r}))^2 - (m_2\sin(\vec{q}.\vec{r}))^2}$. The new basis is related the old basis ($\hat{x}_1$, $\hat{x}_2$, $\hat{x}_3$) via relation

$$\hat{e}_i = \mathcal{R}_z(\theta_3)\mathcal{R}_y(\theta_2)\mathcal{R}_z(\theta_1)\hat{x}_i$$

where $\hat{x}_1 = \hat{x}$, $\hat{x}_2 = \hat{y}$ and $\hat{x}_3 = \hat{z}$. θ_1, θ_2, and θ_3 are the angle of rotation with x, y and z are the axis of rotation respectively. So there are eight variational parameters: θ_1, θ_2, θ_3, m_1, m_2 and $\vec{q}$. Without loss of the generality we can choose $\vec{q}$ to lie in the $x-z$ plane leaving 7 parameters. So we expressed the total energy in terms of the 7 parameters. Those are

$$F_{J_2} = \frac{J_2}{4!}\frac{(q_x^2+q_z^2)^2}{4}\Big(4 - 2(2+m_1^2+m_2^2)\sqrt{(1-m_1^2)(1-m_2^2)}\Big) \tag{3}$$

$$F_{J_1} = -\frac{J_1}{2!}\frac{q_x^2+q_z^2}{4}\Big(1-\sqrt{(1-m_1^2)(1-m_2^2)}\Big) \tag{4}$$

$$F_D = -Dq_x m_1 m_2 \sin\theta_1 \sin\theta_2 \tag{5}$$

$$F_K = \frac{K}{2}\cos^2\theta_2(2-m_1^2-m_2^2) + \frac{K}{2}\sin^2\theta_2\big((m_1\cos\theta_3)^2 + (m_2\sin\theta_3)^2\big) \tag{6}$$

$$\begin{aligned} F_h &= -\frac{h}{2\pi}\cos\theta_2\int_0^{2\pi}\sqrt{1-(m_1\cos u)^2-(m_2\sin u)^2} \\ &= -\frac{h}{\pi/2}\cos\theta_2\sqrt{1-m_1^2}E(-\frac{m_1^2-m_2^2}{1-m_1^2}) \end{aligned} \tag{7}$$

Where $E(k) = \int_0^{\pi/2}\sqrt{1-k\sin^2 x}dx$ is the elliptic integral