ΤΥΠΟΛΟΓΙΟ

Εξίσωση Λαπλάς σε σφαιρικό Σ.Σ., $\frac{1}{r}\frac{\partial^2}{\partial r^2}(r\Phi) + \frac{1}{r^2 sin\theta}\frac{\partial^2}{\partial\theta^2}\left(sin\theta\frac{\partial\Phi}{\partial\theta}\right) + \frac{1}{r^2 sin^2\theta}\frac{\partial^2\Phi}{\partial\varphi^2} = 0.$

$\sum_{l,m} Y_{lm}(\theta,\varphi)Y^*_{lm}(\theta',\varphi') = \delta(\varphi-\varphi')\,\delta(cos\theta - cos\theta)$, $\delta(\vec{x}-\vec{x}') = \frac{\delta(r-r')}{r^2}\delta(cos\theta - cos\theta)\delta(\varphi-\varphi')$

Green ανάμεσα σε σφαιρικούς φλοιούς $G(\vec{x},\vec{x}') = \sum\frac{4\pi}{2l+1}\frac{Y_{lm}(\theta,\varphi)Y^*_{lm}(\theta\prime,\varphi\prime)}{\left[1-\left(\frac{a}{b}\right)^{2l+1}\right]}\left(r_<^l - \frac{a^{2l+1}}{r_<^{l+1}}\right)\left(\frac{1}{r_>^{l+1}} - \frac{r_>^l}{b^{2l+1}}\right).$

Ελλειπτικές διαφορικές εξισώσεις,$\nabla^2\psi(\vec{x}) + [f(\vec{x})+\lambda]\psi(\vec{x}) = 0$, $G(\vec{x},\vec{x}') = 4\pi\sum\frac{\psi_n(\vec{x})\,\psi_n^*(\vec{x}\prime)}{\lambda_n-\lambda}$

Πολυπολικό ανάπτ., $\Phi(\vec{x}) = \frac{q}{r} + \frac{\vec{p}\cdot\vec{x}}{r^3} + \frac{1}{2}Q_{ij}\frac{x_i x_j}{r^5}$, $\vec{p} = \int \vec{x}'\,\rho(\vec{x}')\,d\vec{x}'$, $Q_{ij} = \int\left(3x_i'^{}x_j' - r'^2\delta_{ij}\right)\rho(\vec{x}')\,d\vec{x}'$

Διηλεκτρικά, $\vec{\nabla}\vec{D} = 4\pi\rho$, $\vec{D} = \vec{E} + 4\pi\vec{P}$, $\vec{D} = \varepsilon\vec{E}$. Μαγνητικά, $\vec{\nabla}\times\overrightarrow{H} = \frac{4\pi}{c}\vec{J}$, $\vec{H} = \vec{B} - 4\pi\vec{M}$ και $\vec{B} = \mu\vec{H}$

(1) $\Phi_M(\vec{x}) = -\vec{\nabla}\int\frac{\overrightarrow{M}(\vec{x}')}{|\vec{x}'-\vec{x}|}d\vec{x}'$ **(2)** $\Phi_M(\vec{x}') = -\iiint\frac{\vec{\nabla}\cdot\overrightarrow{M}(\vec{x})}{|\vec{x}'-\vec{x}|}d\vec{x} + \iint\frac{\overrightarrow{M}(\vec{x})\cdot\hat{n}}{|\vec{x}'-\vec{x}|}da$ **(3)** $\vec{A}(\vec{x}') = \iiint\frac{\vec{\nabla}\times\overrightarrow{M}(\vec{x})}{|\vec{x}'-\vec{x}|}d\vec{x} + \iint\frac{\overrightarrow{M}(\vec{x})\times\hat{n}}{|\vec{x}'-\vec{x}|}da$