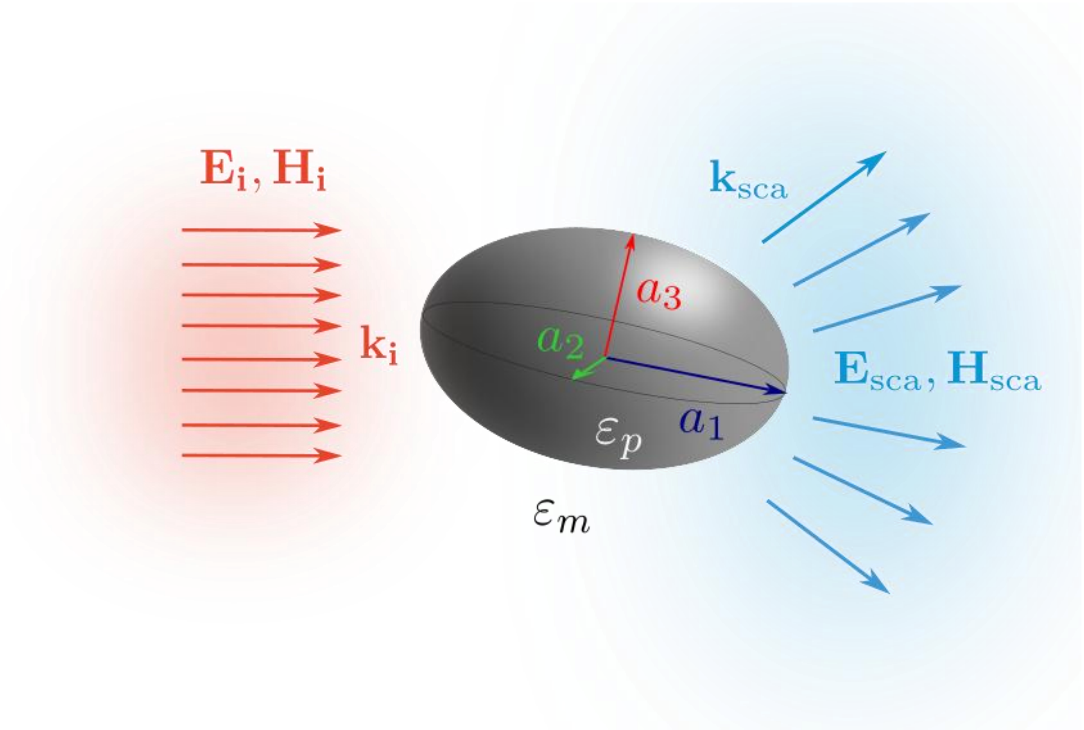
Facultad de Ciencias UNAM

Congreso Nacional de Física 2025
Toluca, Estado de México

Resonancias plasmónicas dipolares en nanoelipsoides: análisis de contribuciones interbanda e intrabanda en el régimen cuasiestático



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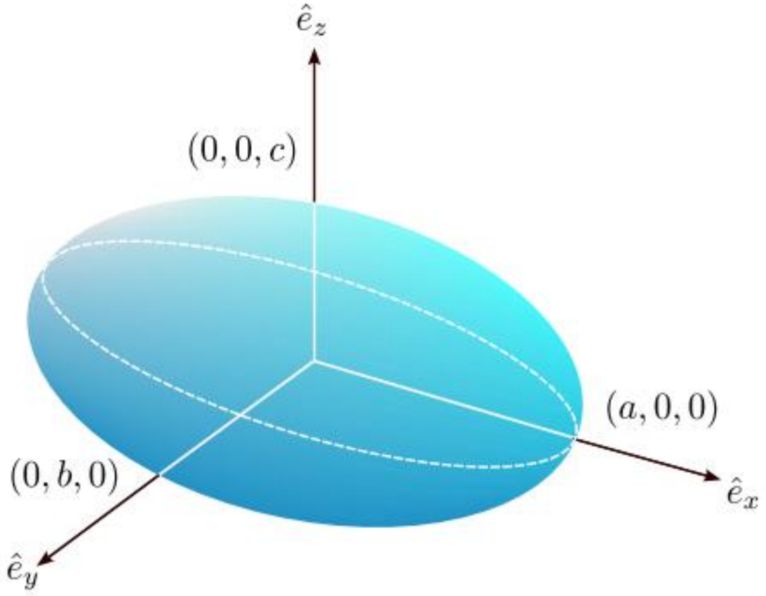
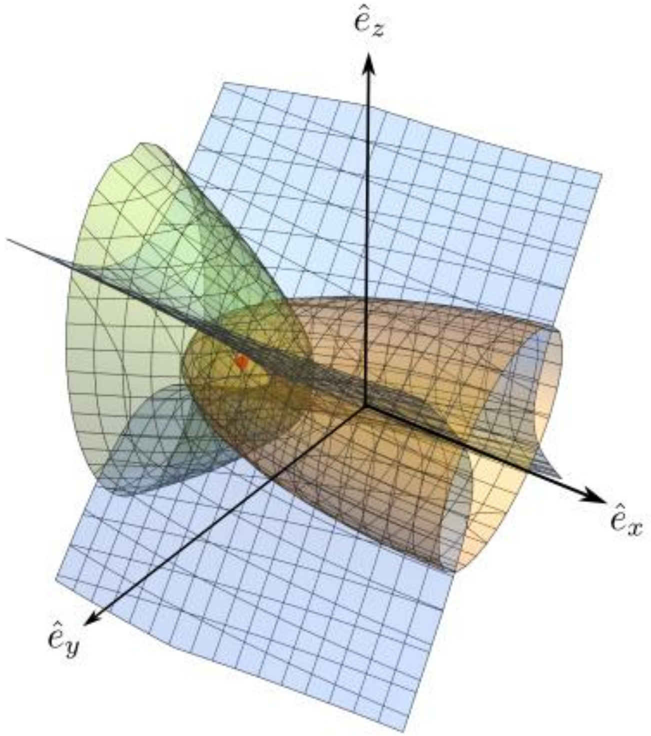
Ecuación de Laplace

$$\nabla^2\phi = \frac{4}{\Upsilon}\left[(\eta-\zeta)f(\xi)\frac{\partial}{\partial\xi}\left(f(\xi)\frac{\partial\phi}{\partial\xi}\right) + (\zeta-\xi)f(\eta)\frac{\partial}{\partial\eta}\left(f(\eta)\frac{\partial\eta}{\partial\eta}\right) + (\xi-\zeta)f(\zeta)\frac{\partial}{\partial\zeta}\left(f(\zeta)\frac{\partial\phi}{\partial\zeta}\right)\right]$$



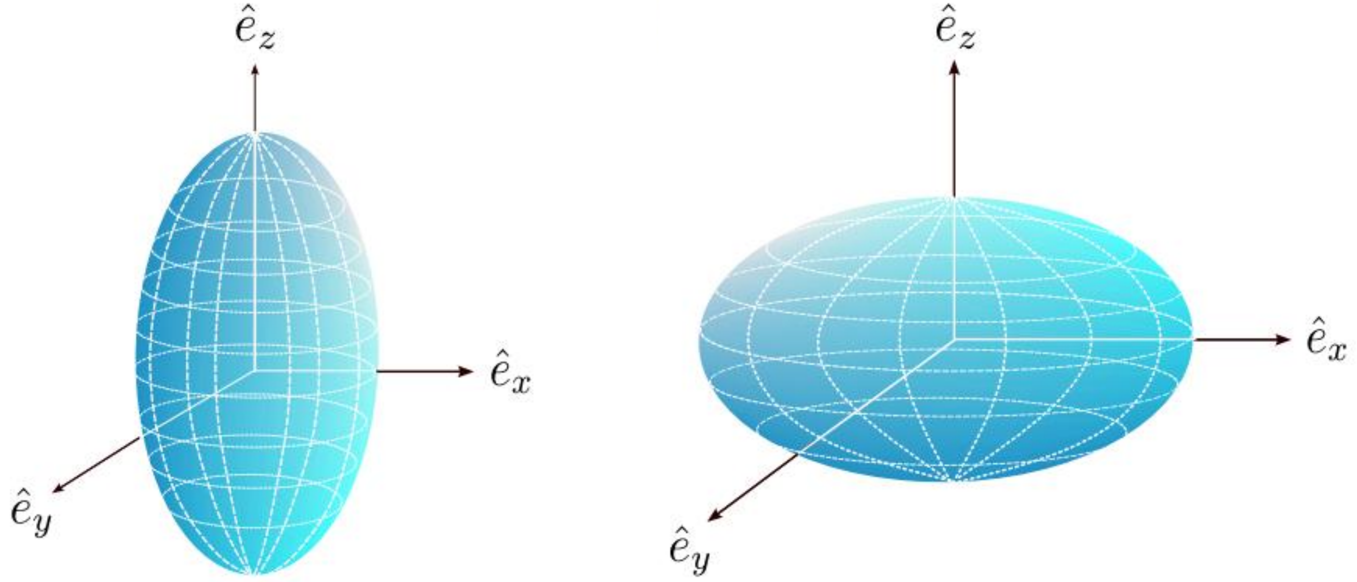


Factores geométricos

$$\alpha^{(j)} = V \frac{\epsilon_{int} - \epsilon_{ext}}{\epsilon_m + L^{(j)}(\epsilon_{int} - \epsilon_{ext})},$$

$$L^{(j)} = \frac{abc}{2} \int_0^\infty \frac{\mathrm{d}q}{(a_j^2 + q) f(q)}$$

$$f(u) = \sqrt{(a^2 + u)(b^2 + u)(c^2 + u)}$$



Factores geométricos

En el caso de los esferoides prolatos se tiene que

$$L_1 = \frac{1-e^2}{e^2}\left[-1 + \frac{1}{2e}\left(\ln\frac{1+e}{1-e}\right)\right] \qquad \text{con} \qquad e^2 = 1 - \frac{b^2}{a^2},$$

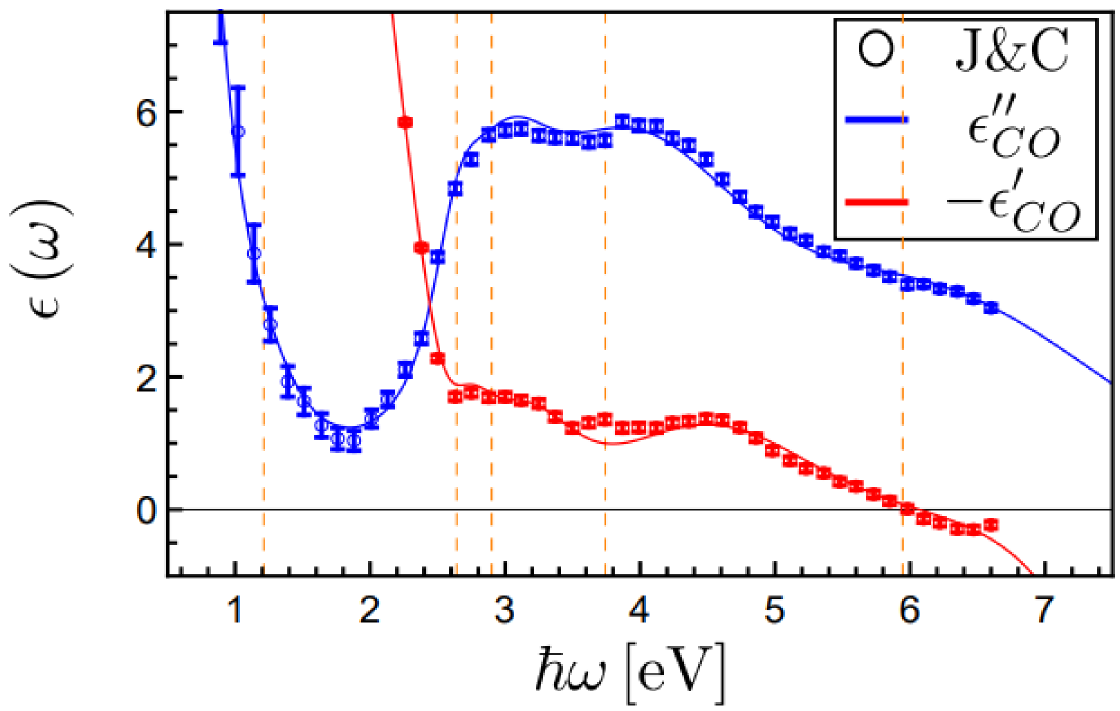
mientras que para los esferoides oblatos se tiene que

$$L_1 = \frac{g(e)}{2e^2}\left[\frac{\pi}{2} - \tan^{-1} g(e)\right] - \frac{g^2(e)}{2},$$

$$g(e) = \left(\frac{1-e^2}{e^2}\right)^{1/2}, \qquad e^2 = 1 - \frac{c^2}{a^2}.$$

Funciones dieléctricas

Oro



Aluminio