

Asimetrías transversales

Ligaduras

Definíamos unas asimetrías genéricas para la parte transversal como:

$$\begin{aligned}\mathcal{A}_T^{mix} &= \frac{|A_{\parallel}|^2 \mathcal{A}_{\parallel}^{mix} + |A_{\perp}|^2 \mathcal{A}_{\perp}^{mix}}{|A_{\parallel}|^2 + |A_{\perp}|^2} \\ \mathcal{A}_T^{\Delta\Gamma} &= \frac{|A_{\parallel}|^2 \mathcal{A}_{\parallel}^{\Delta\Gamma} + |A_{\perp}|^2 \mathcal{A}_{\perp}^{\Delta\Gamma}}{|A_{\parallel}|^2 + |A_{\perp}|^2} \\ \mathcal{A}_T^{dir} &= \frac{|A_{\parallel}|^2 \mathcal{A}_{\parallel}^{dir} + |A_{\perp}|^2 \mathcal{A}_{\perp}^{dir}}{|A_{\parallel}|^2 + |A_{\perp}|^2}\end{aligned}$$

de donde,

$$|\mathcal{A}_T^{mix}|^2 + |\mathcal{A}_T^{\Delta\Gamma}|^2 + |\mathcal{A}_T^{dir}|^2 = \frac{|A_{\parallel}|^4 + |A_{\perp}|^4 + 2|A_{\parallel}|^2|A_{\perp}|^2(\mathcal{A}_{\parallel}^{mix}\mathcal{A}_{\perp}^{mix} + \mathcal{A}_{\parallel}^{\Delta\Gamma}\mathcal{A}_{\perp}^{\Delta\Gamma} + \mathcal{A}_{\parallel}^{dir}\mathcal{A}_{\perp}^{dir})}{(|A_{\parallel}|^2 + |A_{\perp}|^2)^2}$$

Con $\mathcal{A}_{\parallel}^{dir} = \mathcal{A}_{\perp}^{dir} = 0$:

$$|\mathcal{A}_{\parallel}^{mix}|^2 + |\mathcal{A}_{\parallel}^{\Delta\Gamma}|^2 = 1 \begin{cases} \mathcal{A}_{\parallel}^{mix} = \sin \phi_{\parallel} \\ \mathcal{A}_{\parallel}^{\Delta\Gamma} = \cos \phi_{\parallel} \end{cases}$$

$$|\mathcal{A}_{\perp}^{mix}|^2 + |\mathcal{A}_{\perp}^{\Delta\Gamma}|^2 = 1 \begin{cases} \mathcal{A}_{\perp}^{mix} = \sin \phi_{\perp} \\ \mathcal{A}_{\perp}^{\Delta\Gamma} = \cos \phi_{\perp} \end{cases}$$

y

$$\mathcal{A}_T^{dir} = 0$$

$$|\mathcal{A}_T^{mix}|^2 + |\mathcal{A}_T^{\Delta\Gamma}|^2 = \frac{|A_{\parallel}|^4 + |A_{\perp}|^4 + 2|A_{\parallel}|^2|A_{\perp}|^2(\mathcal{A}_{\parallel}^{mix}\mathcal{A}_{\perp}^{mix} + \mathcal{A}_{\parallel}^{\Delta\Gamma}\mathcal{A}_{\perp}^{\Delta\Gamma})}{(|A_{\parallel}|^2 + |A_{\perp}|^2)^2}$$

Por tanto, si se cumple

$$\mathcal{A}_{\perp}^{mix} = -\mathcal{A}_{\parallel}^{mix}$$

$$\mathcal{A}_{\perp}^{\Delta\Gamma} = -\mathcal{A}_{\parallel}^{\Delta\Gamma}$$

entonces:

$$|\mathcal{A}_T^{mix}|^2 + |\mathcal{A}_T^{\Delta\Gamma}|^2 = \left(\frac{A_{\parallel}^2 - A_{\perp}^2}{A_{\parallel}^2 + A_{\perp}^2} \right)^2$$