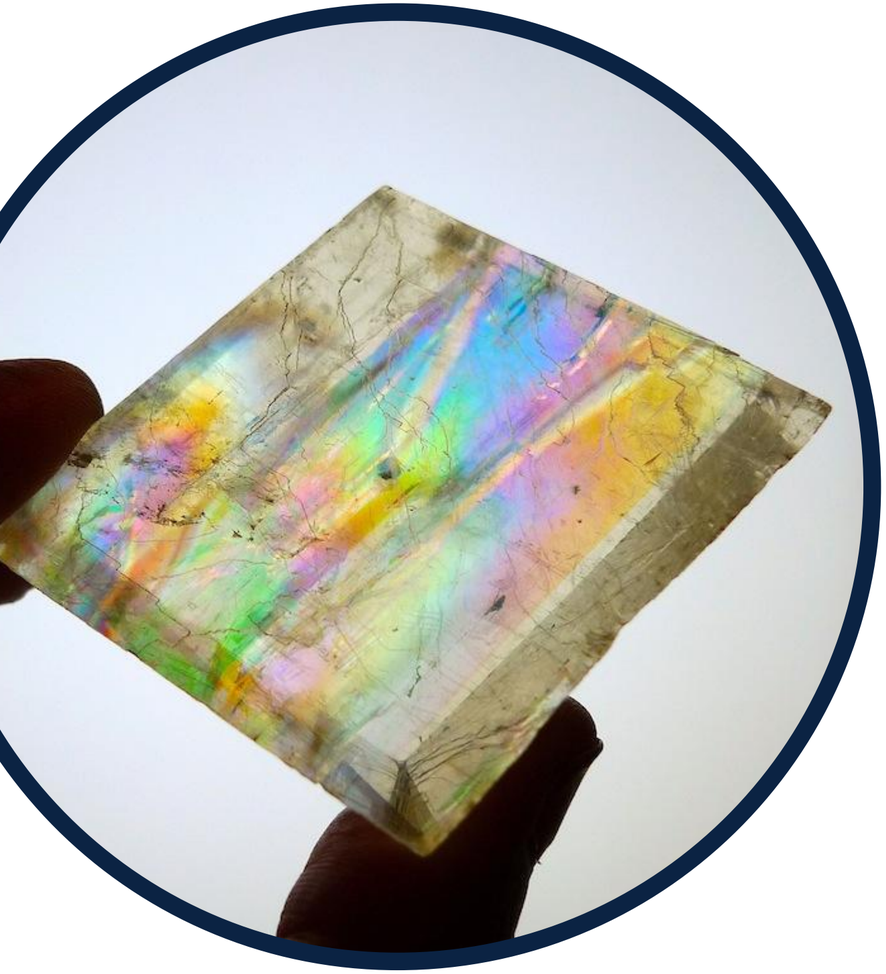
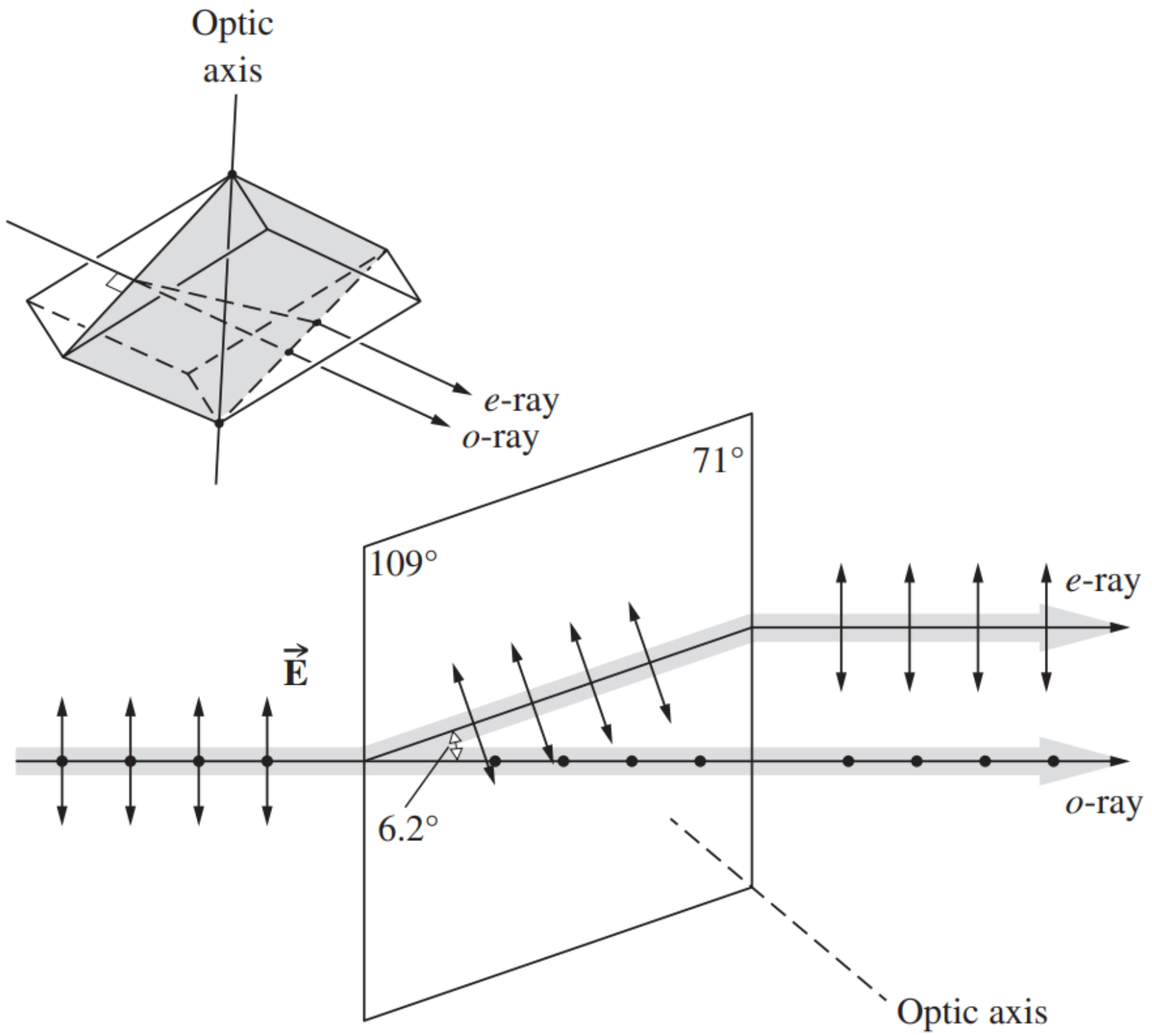


Universidad Industrial de Santander

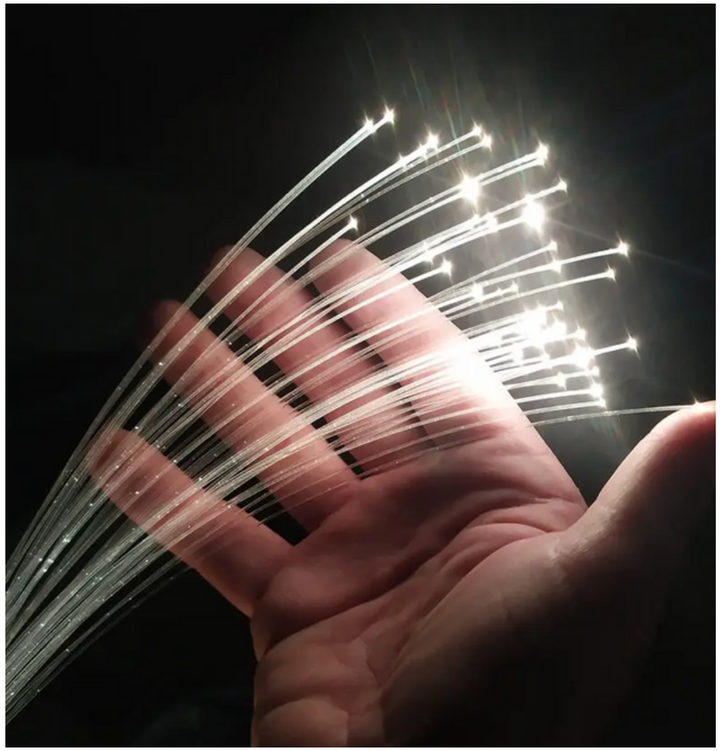
METODOLOGÍA DE CARACTERIZACIÓN DE UN MEDIO BIRREFRINGENTE CON MODOS PROPIOS ELÍPTICOS

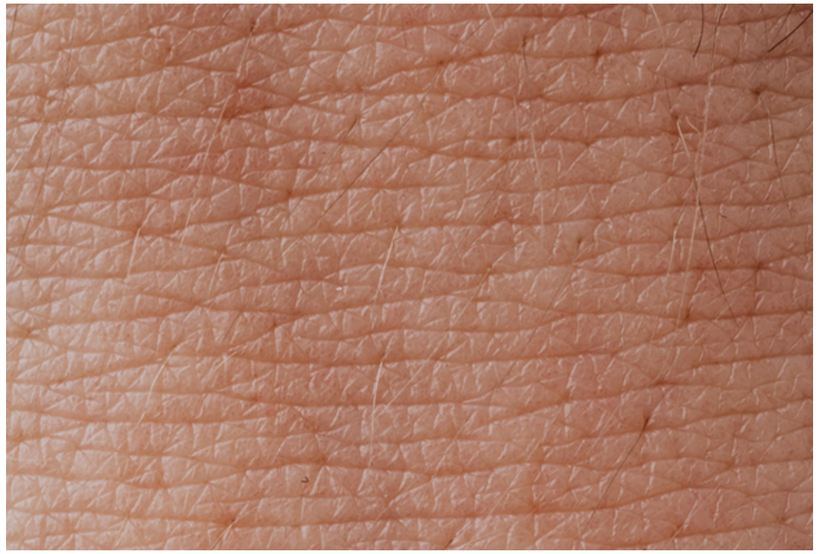
Camilo Andrés Cadena



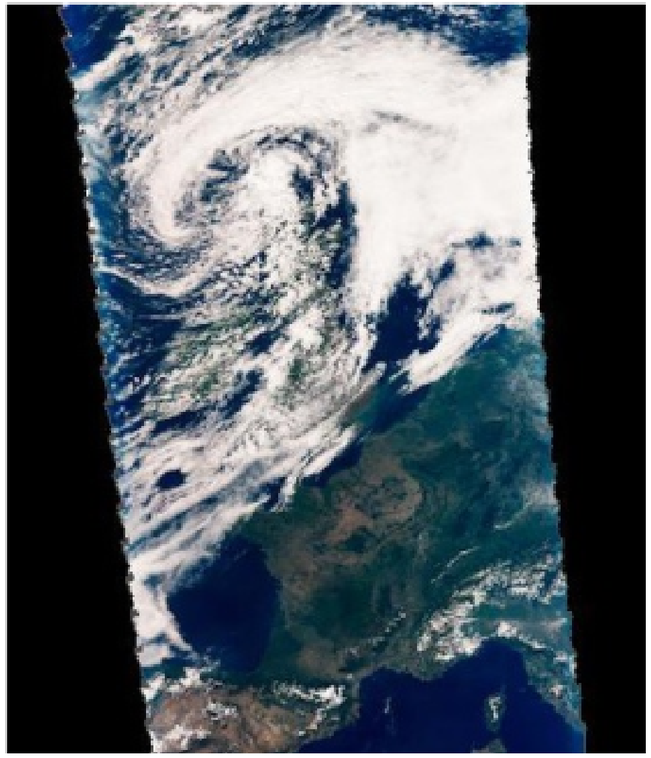
Representación gráfica del efecto de un birrefringente

Fuente: Hecht, E. (2017). *Optics*. Pearlson.

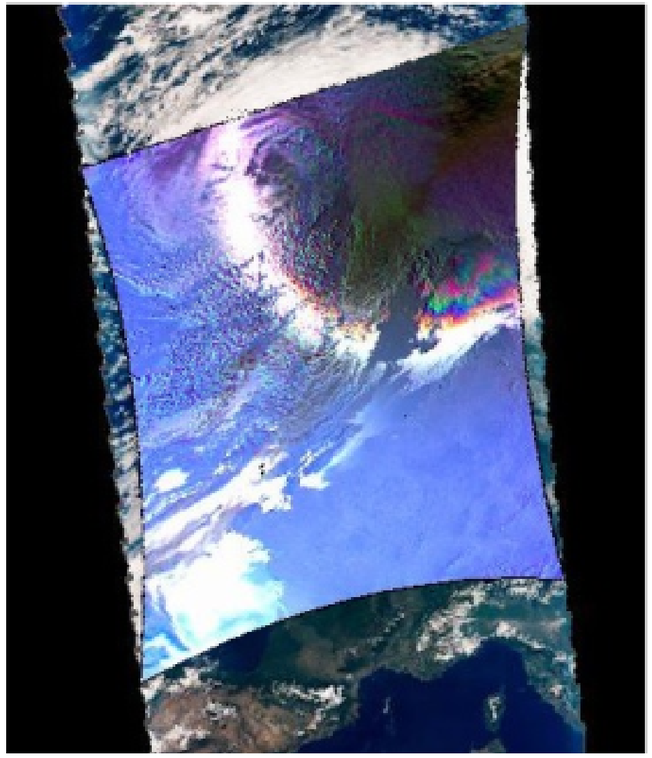


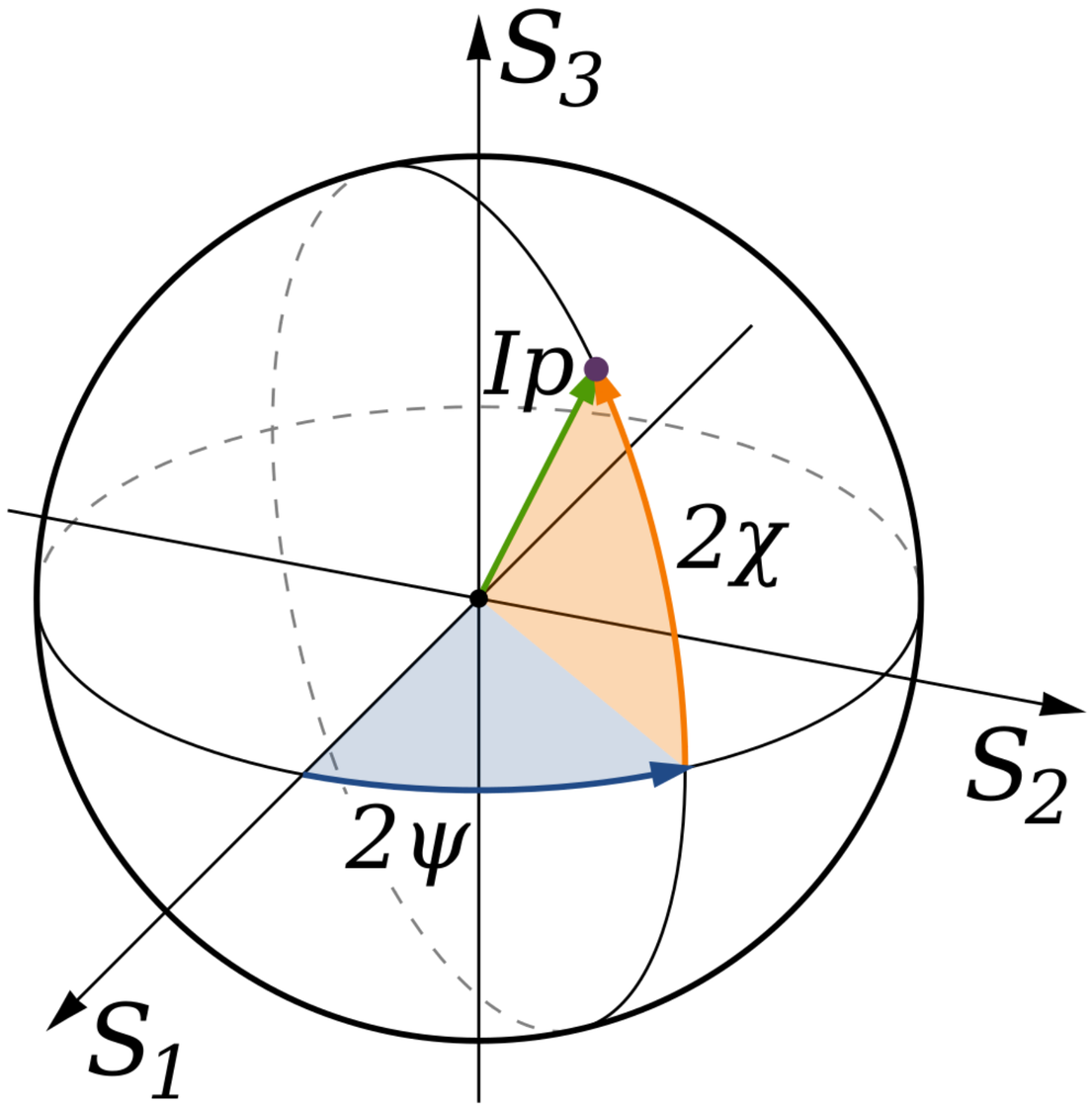


Intensity



Polarization

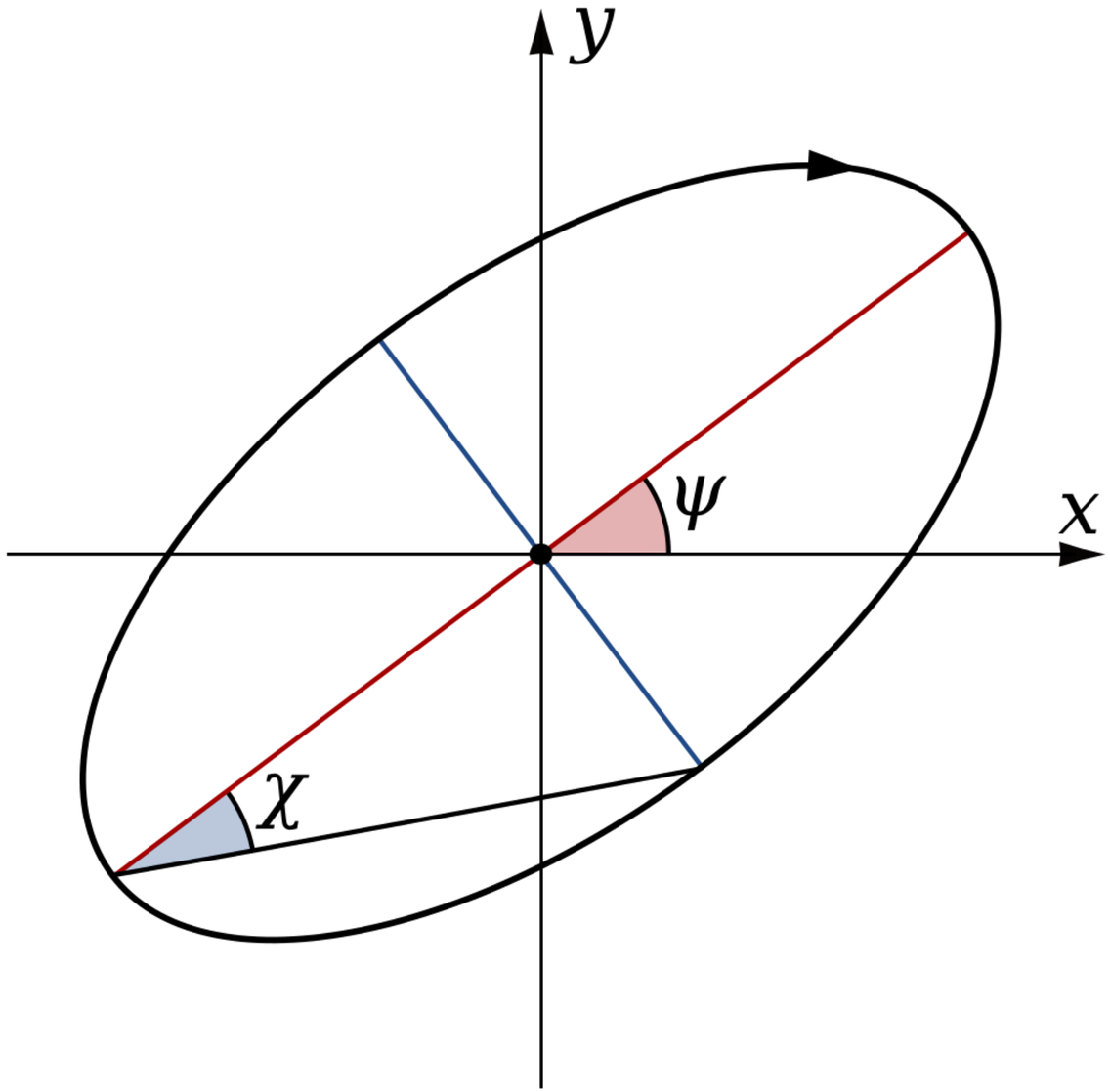




Esfera de Poincaré

Fuente: Hecht, E. (2017). Pearlson.

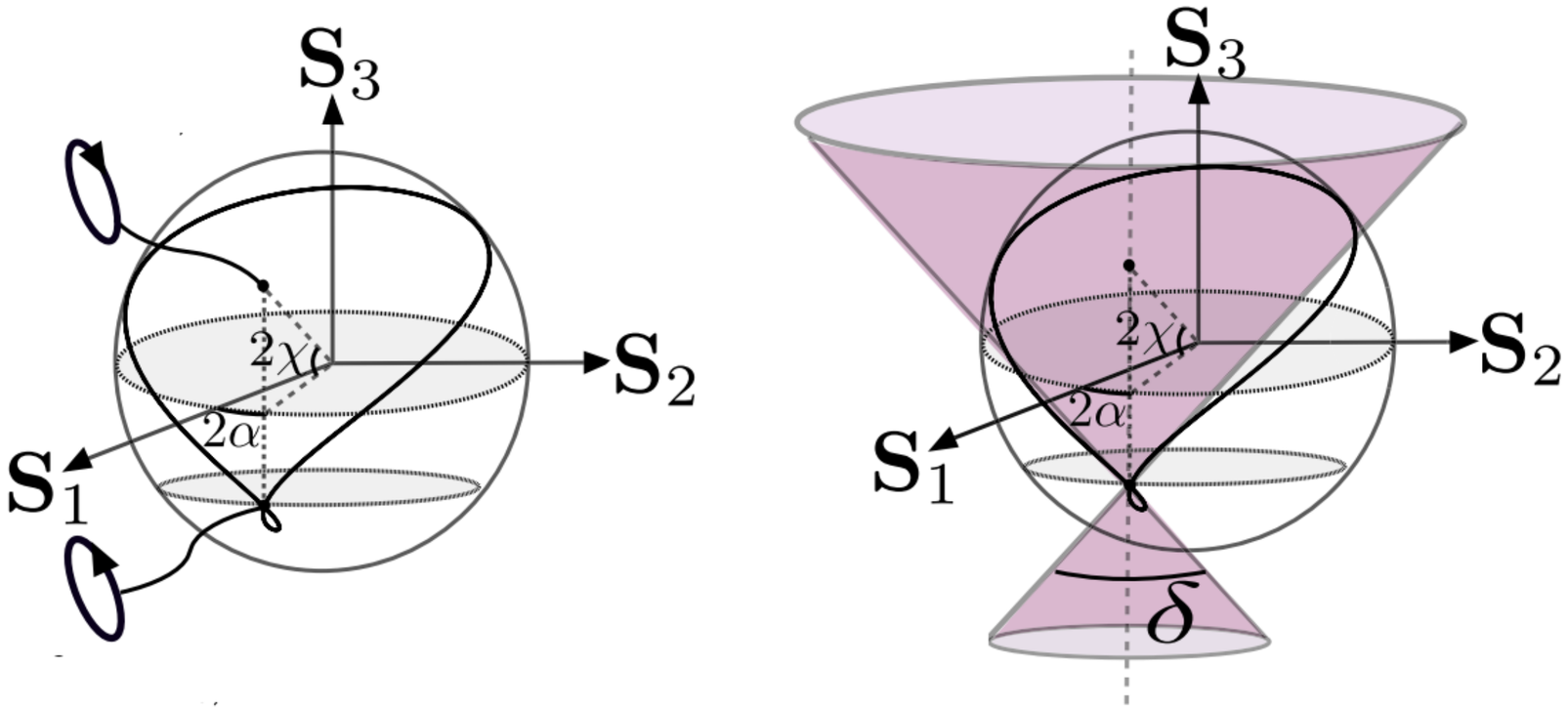
Parámetros intrínsecos



Elipse de polarización

Fuente: Hecht, E. (2017). *Optics*. Pearlson.

Parámetros equivalentes



Ley de los Birrefringentes elípticos

Fuente: Pabón et all. Tunable birefringence Vol. 40, No. 10 / October 2023 / Journal of the Optical Society of America A

Parámetros intrínsecos

$$(\alpha, \chi, \gamma)$$

$$\cos\frac{\gamma}{2} = \cos\frac{\delta}{2}\cos\frac{\varphi}{2},$$

Parámetros equivalentes

$$(\alpha', \delta, \varphi)$$

$$\tan 2\chi = \cot\frac{\delta}{2}\sin\frac{\varphi}{2},$$

$$2\alpha = 2\alpha' - \frac{\varphi}{2}.$$

Fuente: Yu C.-J., Lin C.-E., Li Y.-C., Chou L.-D., Wu J.-S., Lee C.-C., Chou C., 2009, Optics Express, 17, 19213

6.3. *Paramètres équivalents*

En général les paramètres intrinsèques d'un biréfringent elliptique ne sont pas directement accessibles à l'expérience. Nous allons introduire des paramètres 'équivalents' qui le seront.

Fuente: Pierre Pellat-Finet (1984) Représentation des états et des Opérateurs de Polarisation de la Lumière Par des Quaternions, Optica Acta: International Journal of Optics, 31:4, 415-434

Research Article Vol. 30, No. 10 / 9 May 2022 / Optics Express 16734
Optics EXPRESS

Generalized elliptical retarder design and construction using nematic and cholesteric phase liquid crystal polymers

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Effect of elliptical birefringence on the measurement of the phase retardation of a quartz wave plate by an optical heterodyne polarimeter

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Yeu-Chuen Huang and Ming Chang

Department of Mechanical Engineering, Chuan Yuan Christian University, Chung Li, Taiwan 320, China

Dual-frequency heterodyne ellipsometer for characterizing generalized elliptically birefringent media

Chih-Jen Yu[1], Chu-En Lin[1], Ying-Chang Li[1], Li-Dek Chou[2], Jheng-Syong Wu[1], Cheng-Chung Lee[1], and Chien Chou[1,2,*]

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1 October 2001

Optics Communications 197 (2001) 235–238

OPTICS COMMUNICATIONS

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Senarmont compensator for elliptically birefringent media

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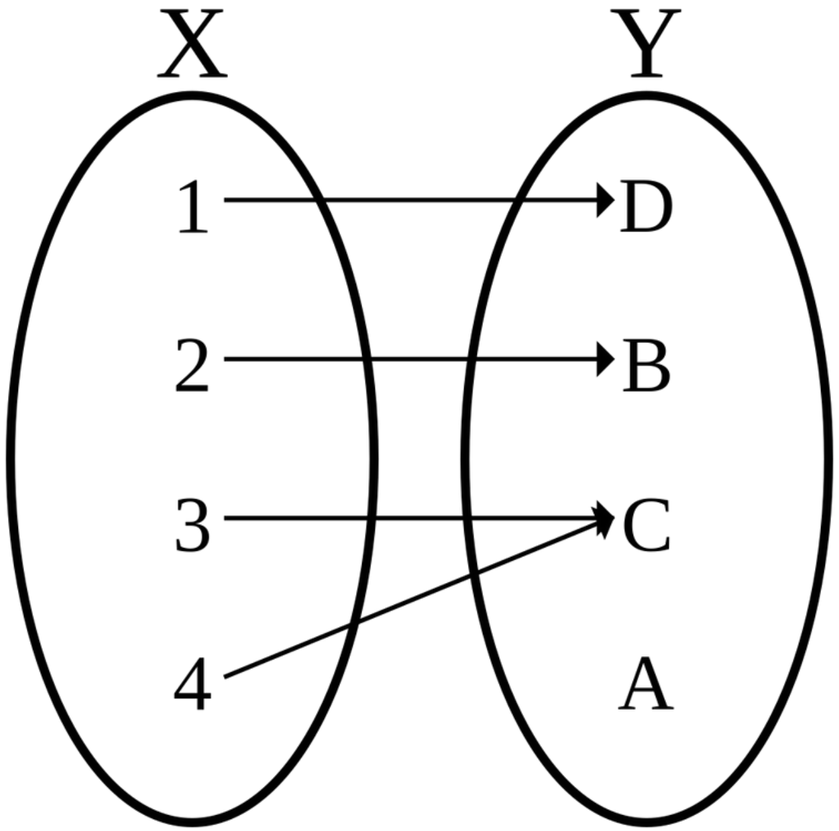
Institute of Physics, Wrocław University of Technology, Wybrzeże Wyspiańskiego 27, 50-370 Wrocław, Poland

Received 12 February 2001; received in revised form 25 May 2001; accepted 16 July 2001

Existen decenas de artículos que replican esta idea.

¿Cuál es el problema?



$$\cos\frac{\gamma}{2} = \cos\frac{\delta}{2}\cos\frac{\varphi}{2}$$

Consecuencia

Los medios birrefringentes **no** se caracterizan bien.

¿Cómo vamos a contribuir?

Unificando las representaciones.

Elaborando un algoritmo **experimental.**

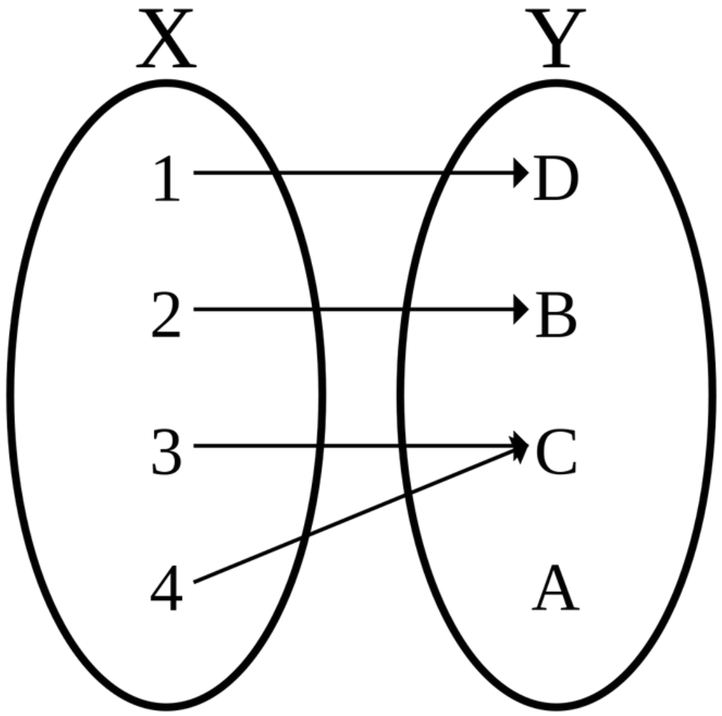
Caraterizar **por completo** al BE

Anexos

No hay inyectividad

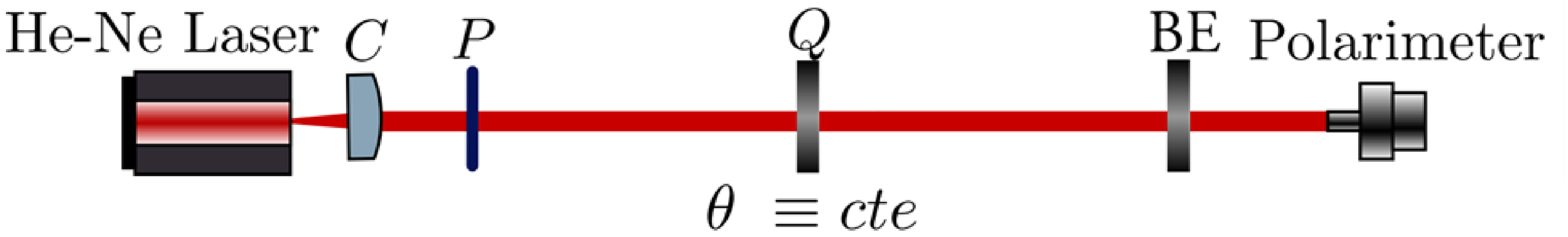
Parámetros intrínsecos

(α, χ, γ)



Parámetros equivalentes

$(\alpha', \delta, \varphi)$


He-Ne Laser
C
P
Q
BE
Polarimeter
θ ≡ cte