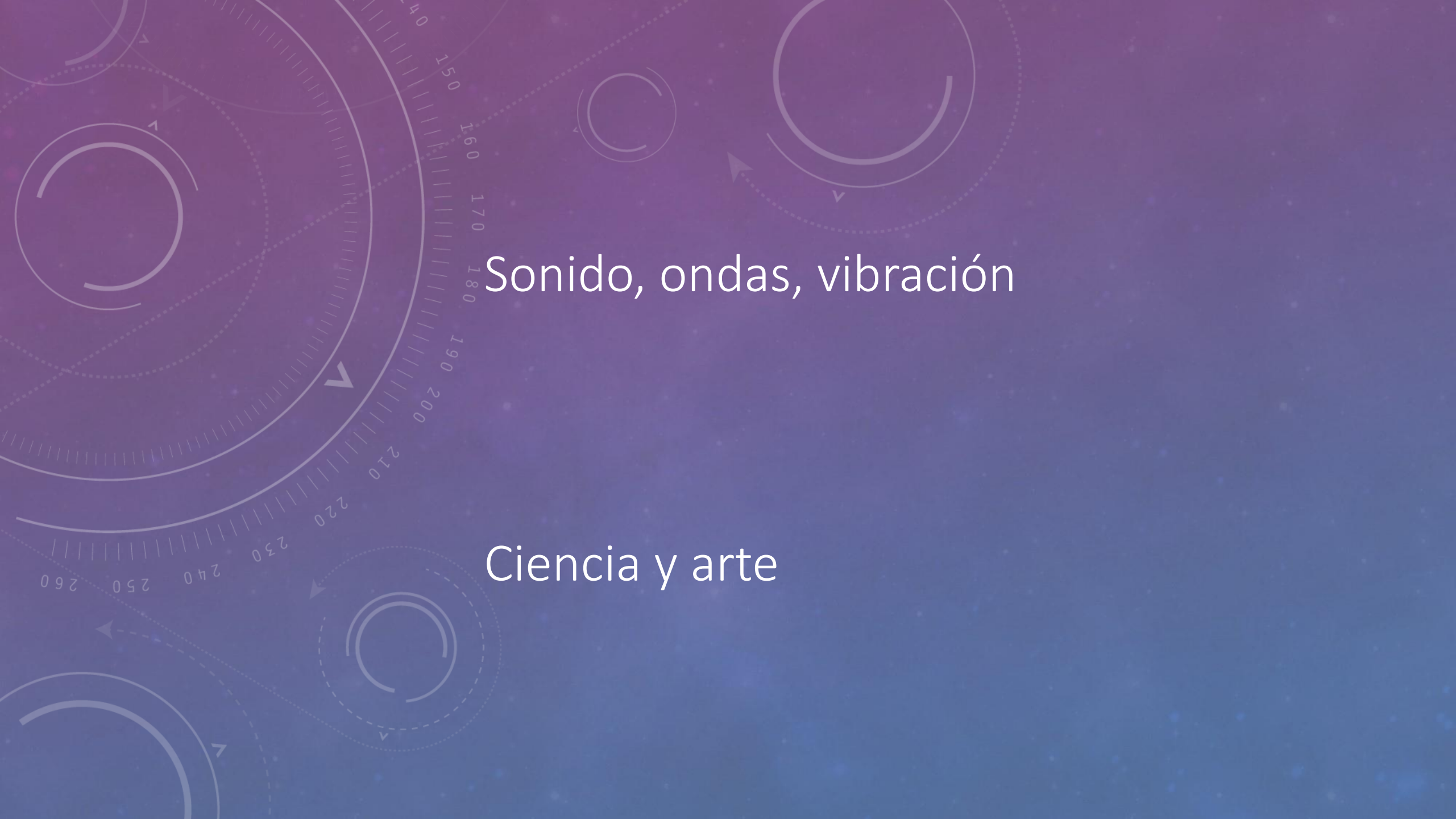


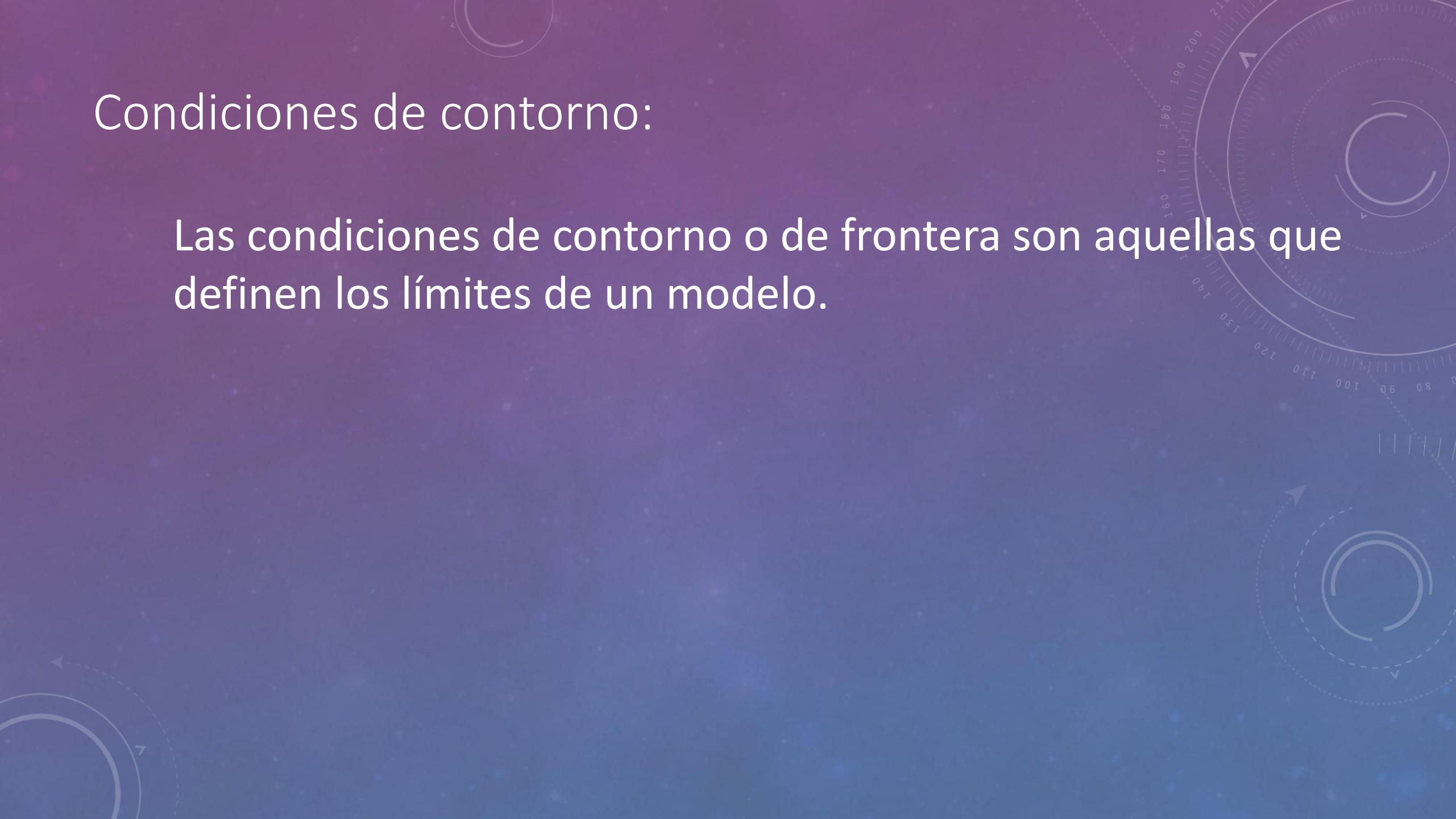
The background is a gradient of purple and blue, overlaid with faint, white, abstract circular patterns. A prominent circular scale is visible on the left side, with numerical markings ranging from 140 to 260. Several concentric circles and arcs are scattered across the image, some with arrows indicating a clockwise or counter-clockwise direction. The overall aesthetic is technical and scientific.

Sonido, ondas, vibración

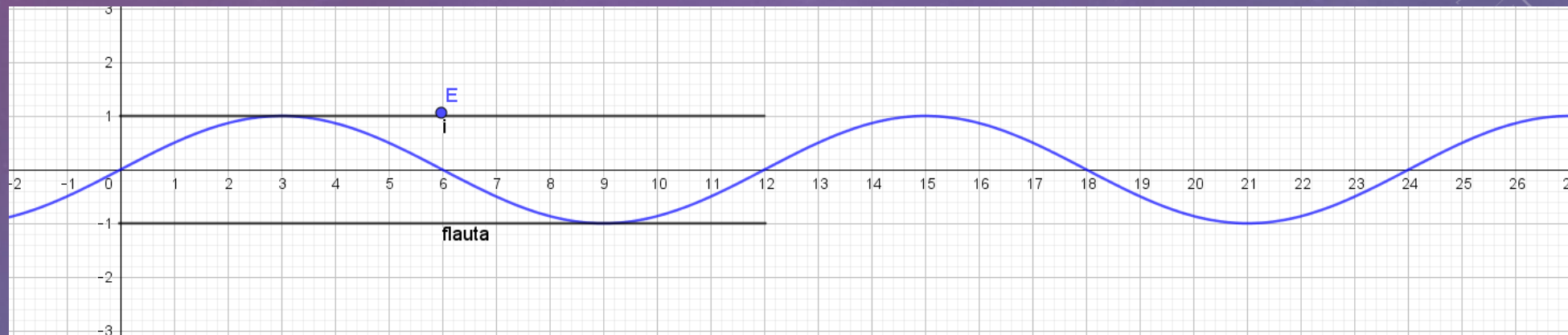
Ciencia y arte

Condiciones de contorno:

Las condiciones de contorno o de frontera son aquellas que definen los límites de un modelo.

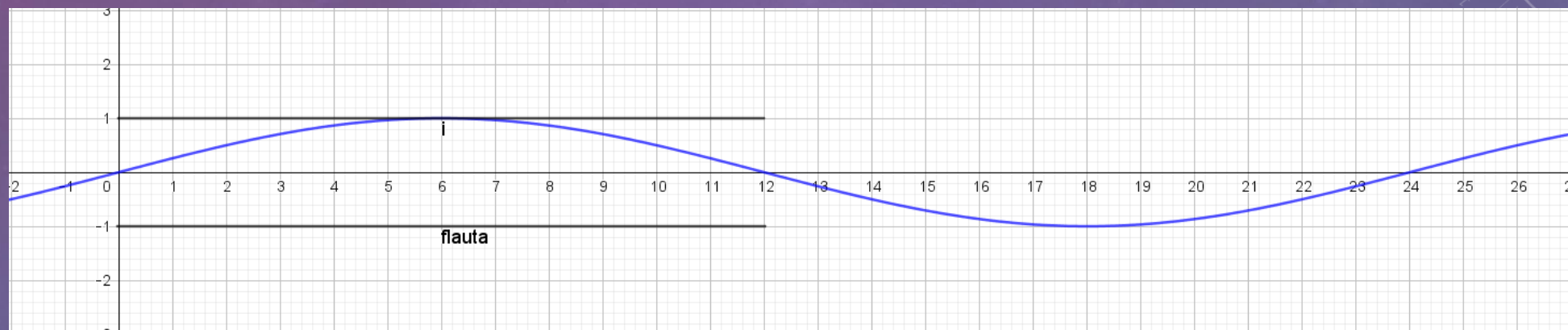


Ondas sonoras



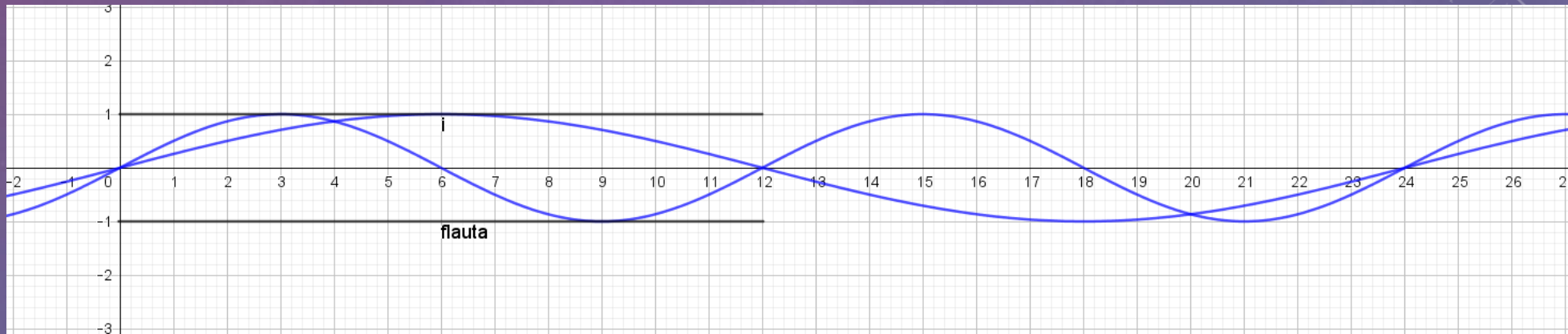
Longitud de onda = 12 cm

Ondas sonoras



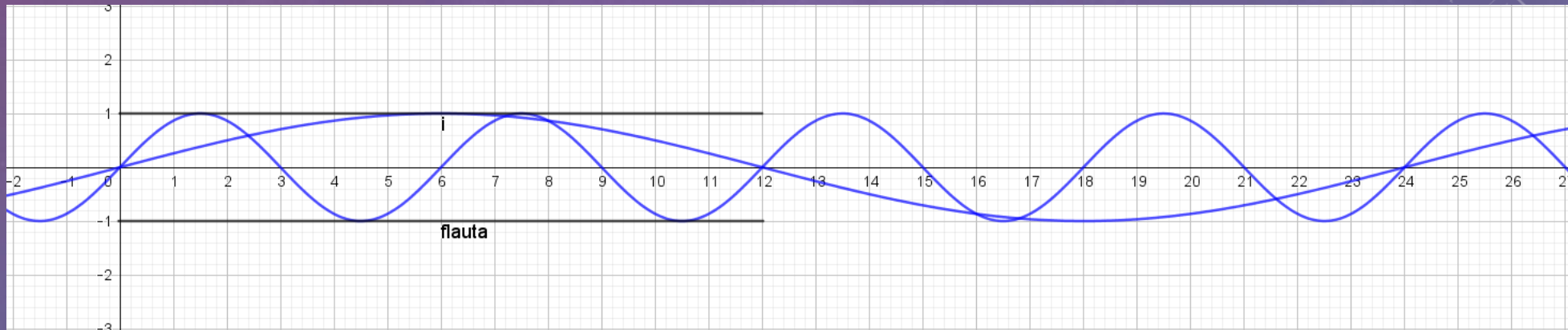
Longitud de onda = 24 cm

Ondas sonoras



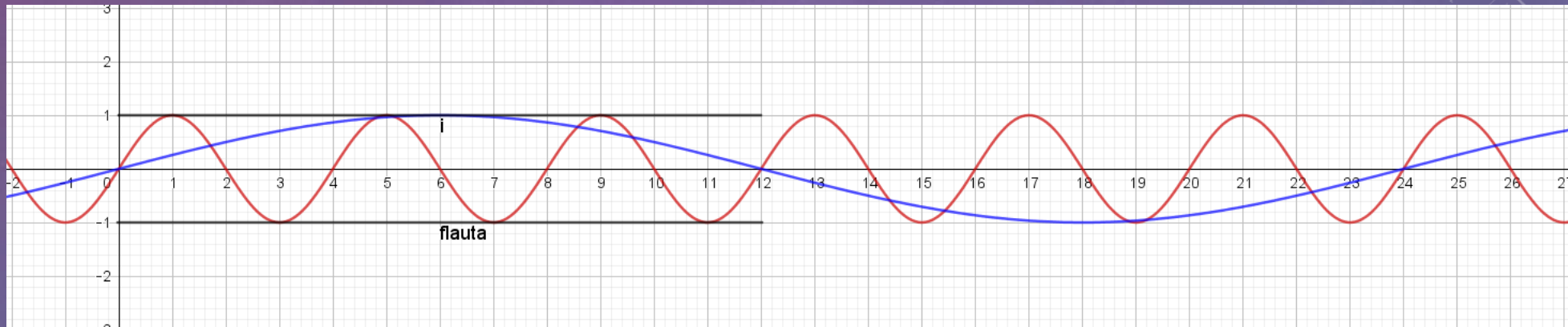
Longitud de onda = 24 cm y 12 cm

Ondas sonoras



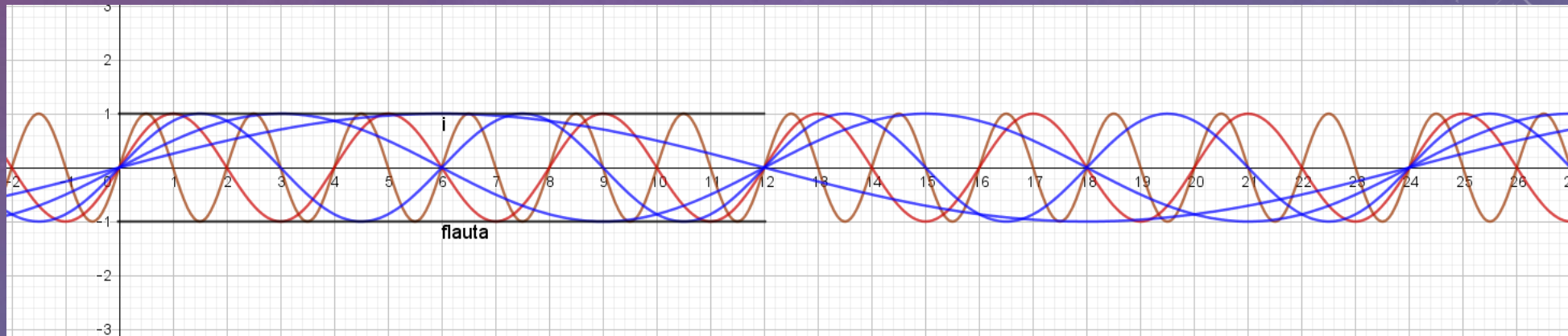
Longitud de onda = 24 cm y 6 cm

Ondas sonoras



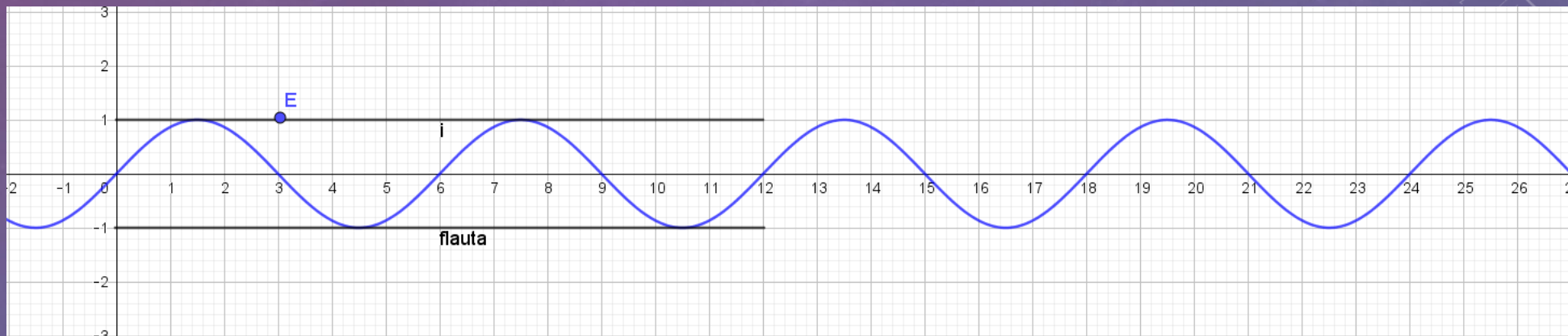
Longitud de onda = 24 cm y 4 cm

Ondas sonoras



Longitud de onda = 24 cm, 12, 9, 6, 4... cm

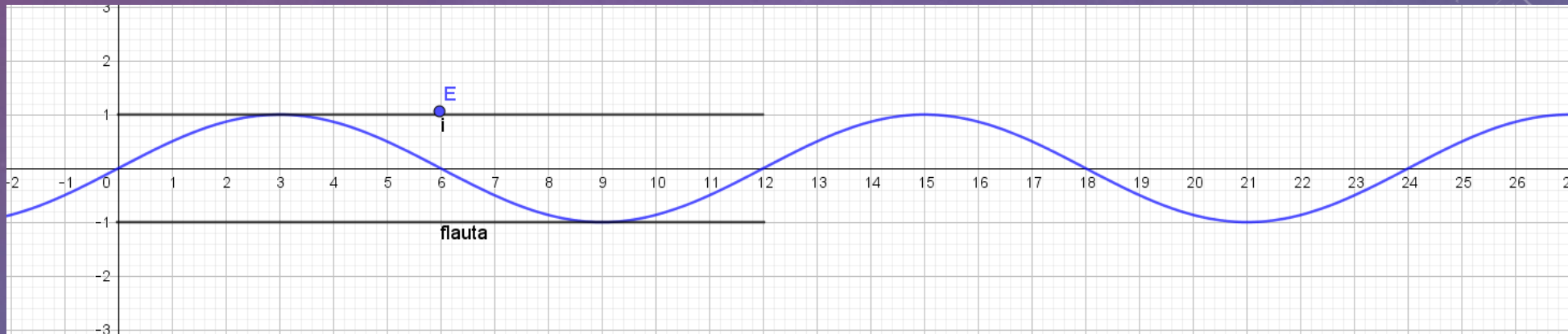
Ondas sonoras



Longitud de onda = 6 cm

Un agujero a 3 cm

Ondas sonoras



Longitud de onda = 12 cm

Un agujero a 6 cm

Aberturas = condiciones de frontera = P atmosférica

Ondas sonoras

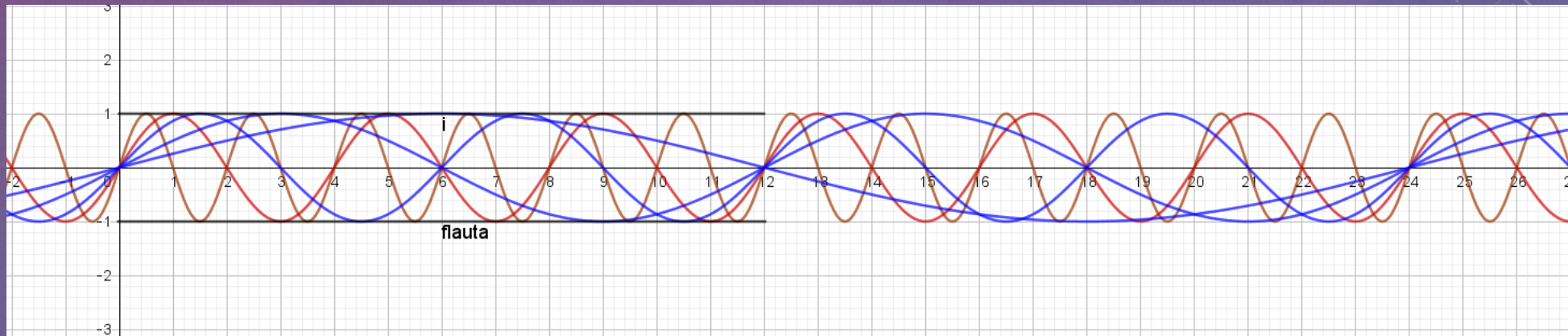
$$f = \frac{v}{\lambda}$$

Do	C	261,83 Hz
Re	D	293,66 Hz
Mi	E	329,63 Hz
Fa	F	349,23 Hz
Sol	G	391,99 Hz
La	A	440 Hz
Si	B	493,88 Hz

$$\lambda = \frac{v}{f} = 340 / 440 = 0,773 \text{ m} = 77,3 \text{ cm}$$

Ondas sonoras

Octavas



Longitud de onda = 24 cm, 12, 9, 6, 4... cm

Octava: rango de frecuencias entre dos notas que están separadas por una relación 2:1

Alejandro González Gómez

TecnoarTEA 2018 El sonido



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