



abundante

27%

**Fracamente
interagente**

**Não tem carga
elétrica**

**forma
estruturas**

Detectável

**O que
sabemos**

Matéria Escura No Ensino Médio

Farinaldo Queiroz

2024

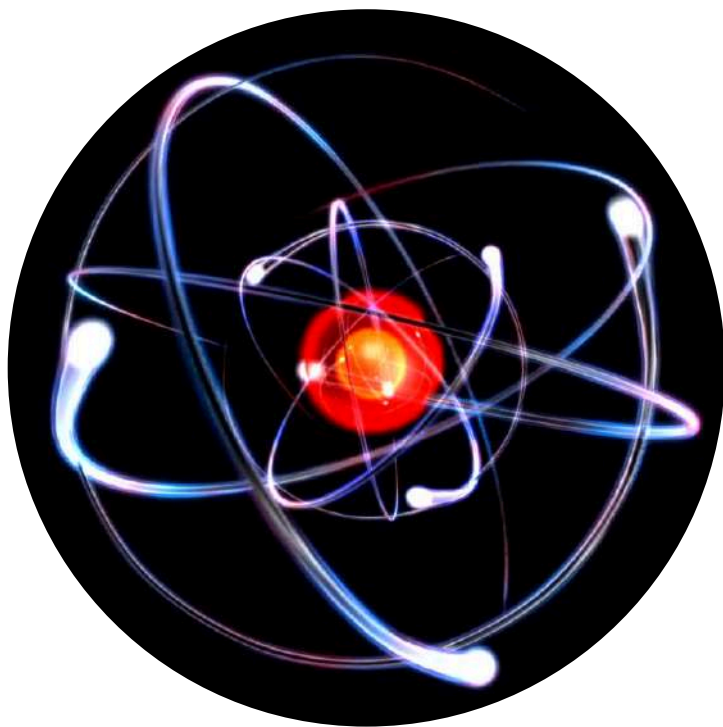


farinaldo queiroz



O que é?

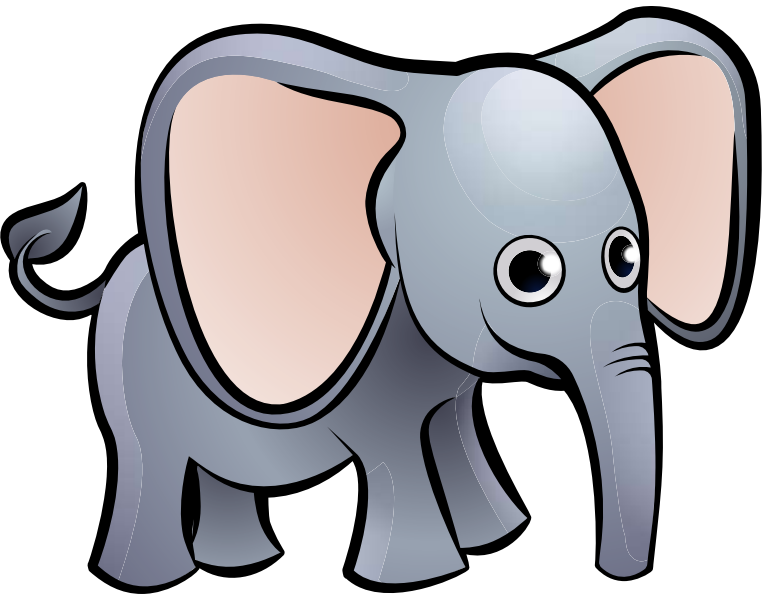
Partículas



Buracos Negros



Super leve



Super leve



**Zebra-
Superwimp**



WIMP



Buracos Negros



Áxions



DETECÇÃO INDIRETA DE MATÉRIA ESCURA

A man with short brown hair, wearing dark sunglasses and a light blue and white patterned button-down shirt, stands on the left side of the frame. His hands are clasped in front of him. To his right is a large black speech bubble with a white outline, containing the word 'Indireta' in a white serif font.

Indireta





O Cerro Paranal é uma montanha localizada no deserto do Atacama, na região norte do Chile (2600 metros de altitude)

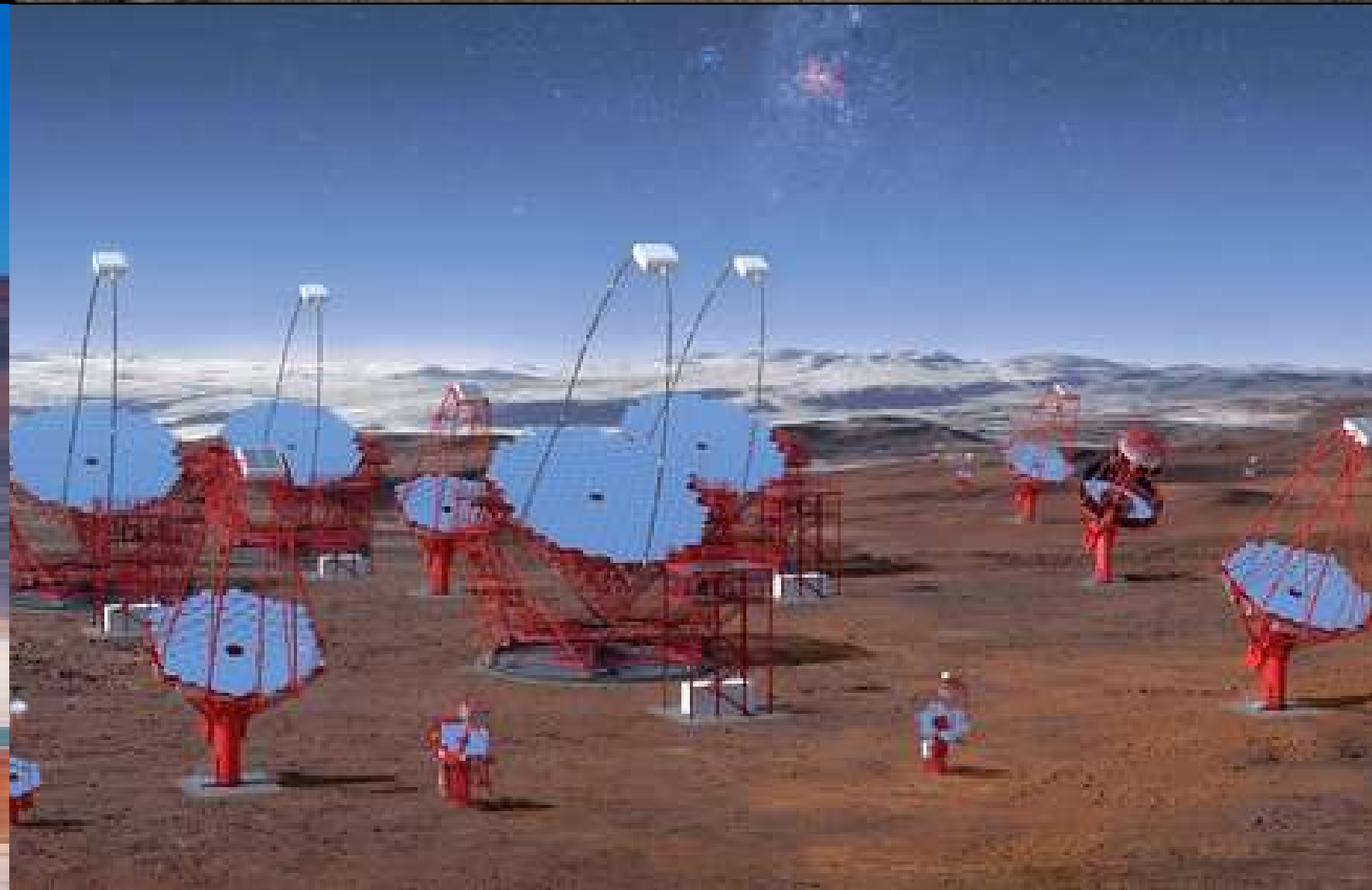
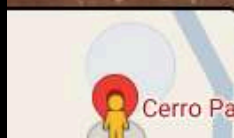
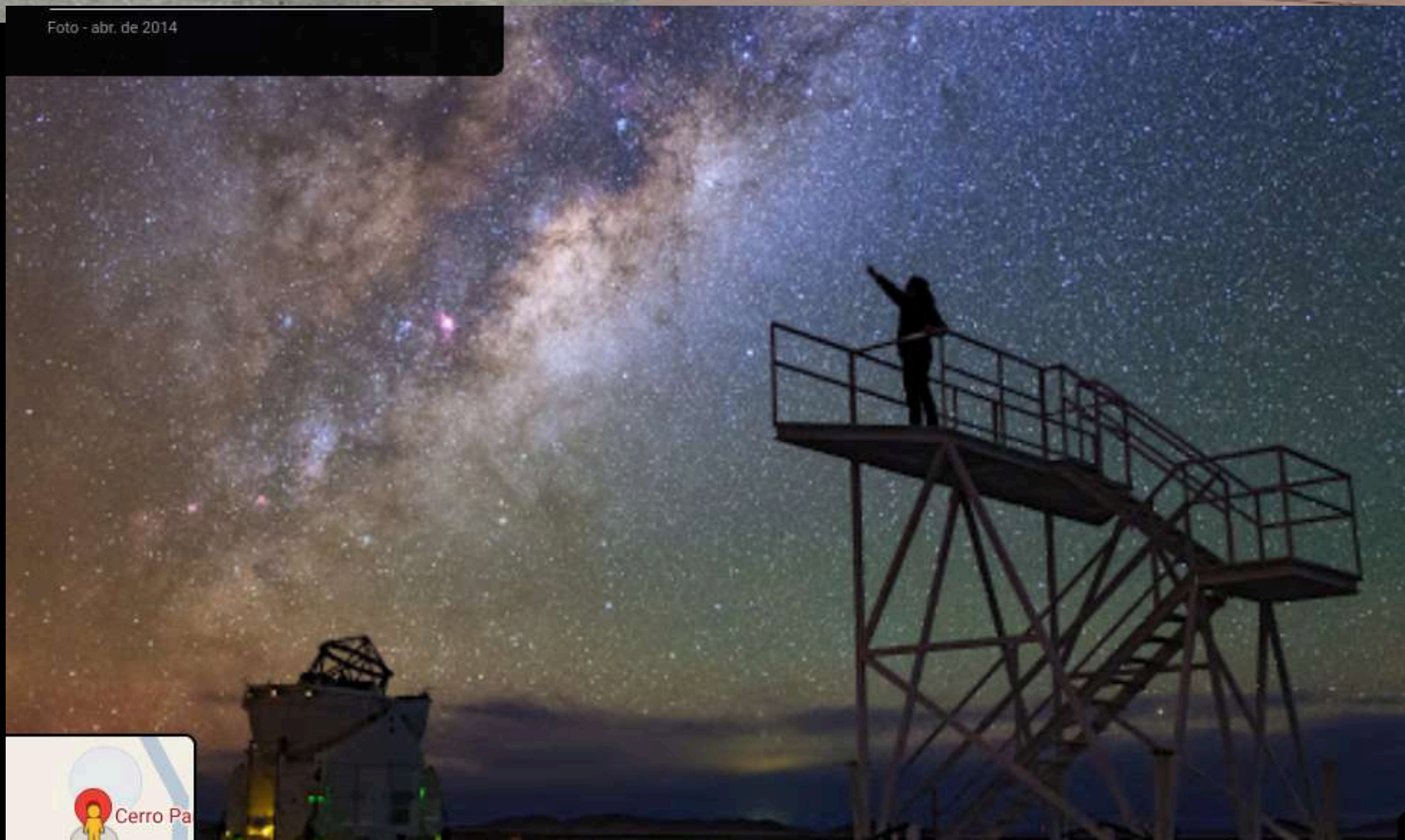


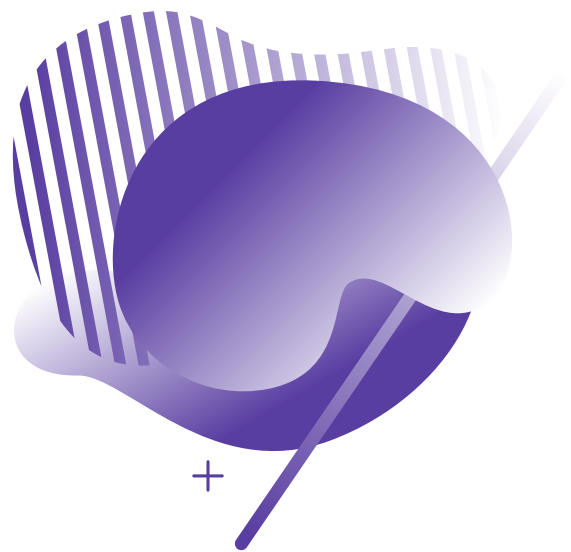


Foto - abr. de 2014



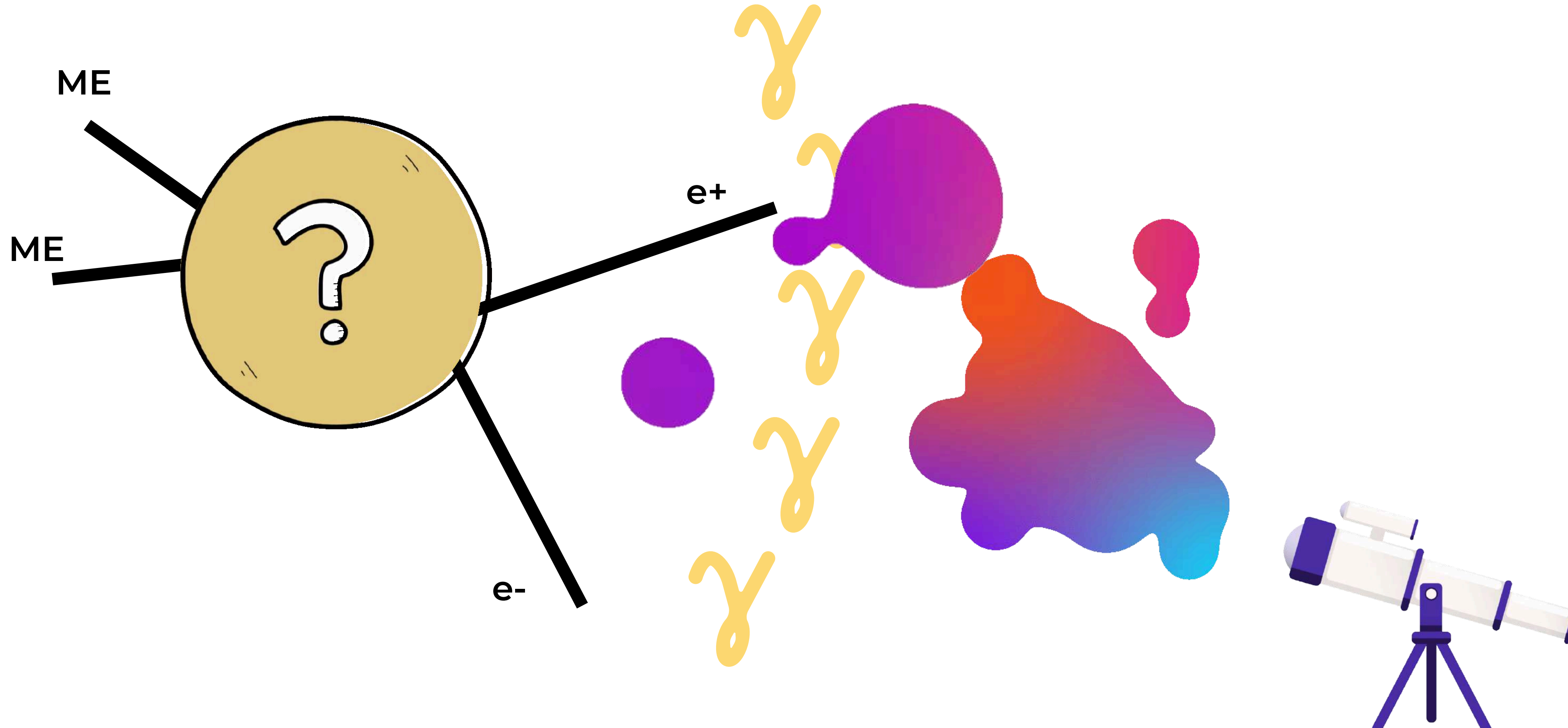


Ilhas Canárias Espanha





Espectro de Energia: pacote numéricos



CTAO (Cherenkov Telescope Array Obs.)



$$\frac{d\Phi}{dE} \propto n_{\chi}^2 \langle \sigma v \rangle \frac{dN}{dE} d\Omega$$



Número de Densidade

Seção de Choque

Espectro de Energia

$$n_{\chi} = \rho_{\chi} / m_{\chi}$$



Detecção Indireta

$$\text{FLUXO (E)} = \frac{\text{Seção de Choque} \times F(E) \times \text{Fator Astrofísico}}{\text{Massa}^2}$$