

# QUANTO “PESA” A VIA LÁCTEA?



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STARRYEARTH

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**MASSA X PESO**

# MASSA X PESO

INTRÍNSECO

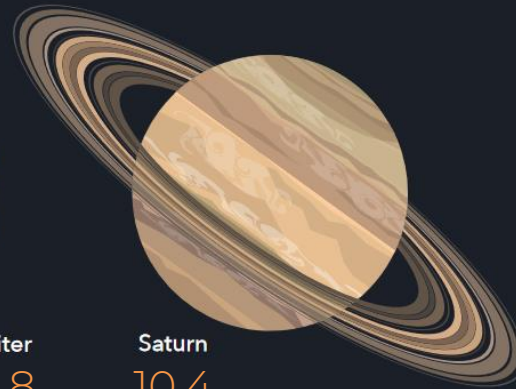
GRAVIDADE  
depende da massa

MASSA x GRAVIDADE

# MASSA X PESO



Jupiter  
24,8



Saturn  
10,4



Uranus  
8,7

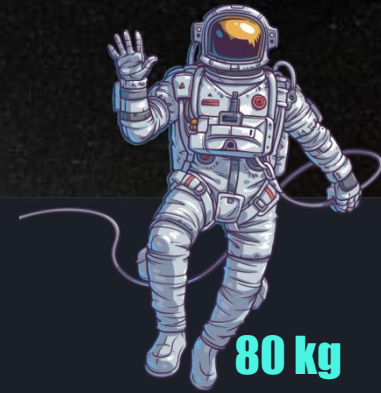


Neptune  
11,2

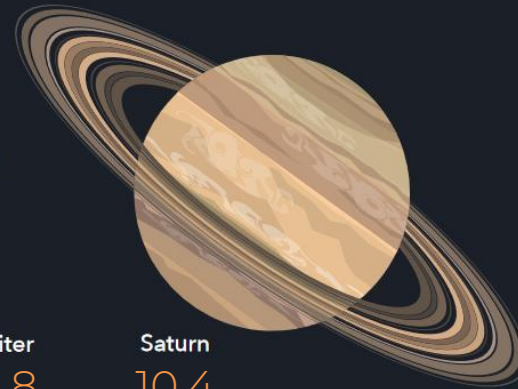
Acumulação da gravidade na superfície (em  $m/s^2$ )



# MASSA X PESO



Jupiter  
24,8



Saturn  
10,4



Uranus  
8,7



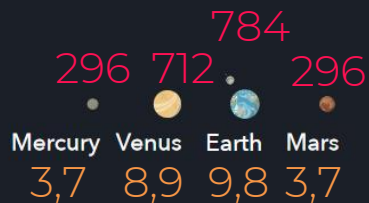
Neptune  
11,2

Aceleração da gravidade na superfície (em  $m/s^2$ )

# MASSA X PESO

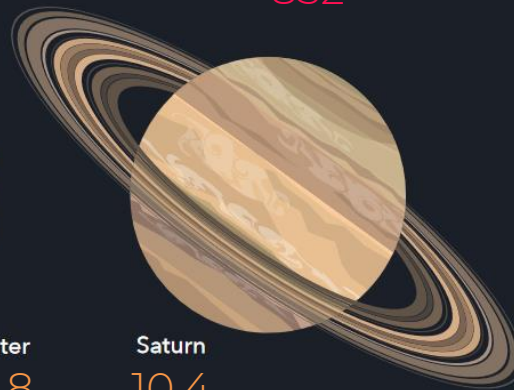


80 kg



1984

Jupiter  
24,8



832

Saturn  
10,4



696

Uranus  
8,7



896

Neptune  
11,2

Aceleração da gravidade na superfície (em  $m/s^2$ )



**O QUE É A VIA LÁCTEA?**





<https://www.eso.org/public/images/dsc-9132-tiff-cc/>





KIKO • FAIRBAIRN  
Antofagasta - Chile, 03, 2016





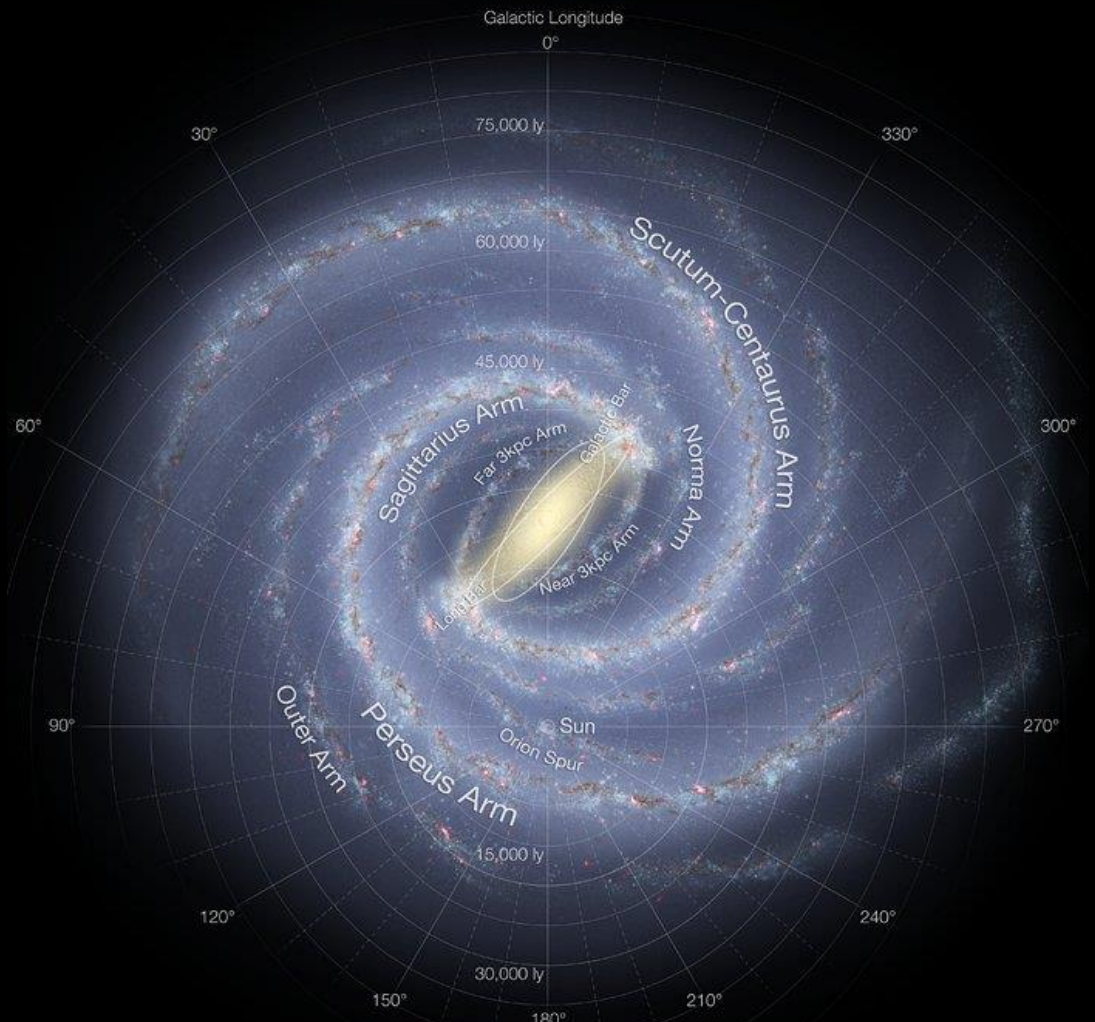






**COMO É A VIA LÁCTEA?**









<https://www.eso.org/public/videos/eso1339a/>  
<https://www.eso.org/public/images/eso1339a/>



NGC6744

<https://www.eso.org/public/images/eso1118a/>

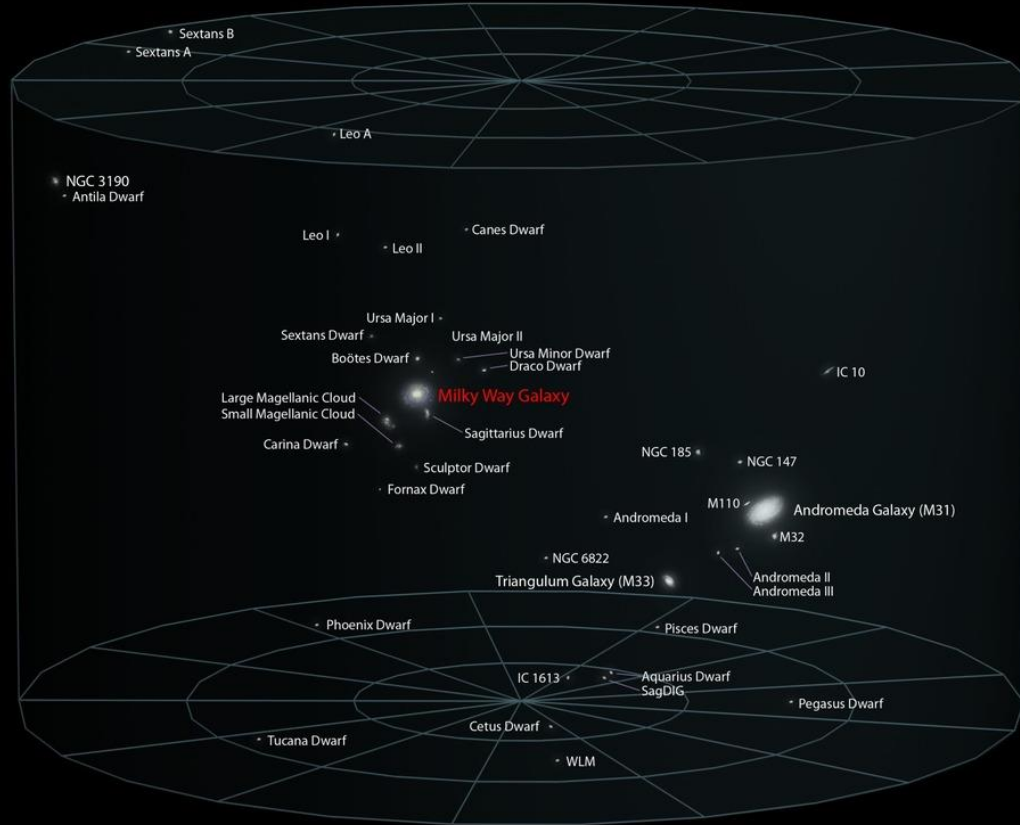


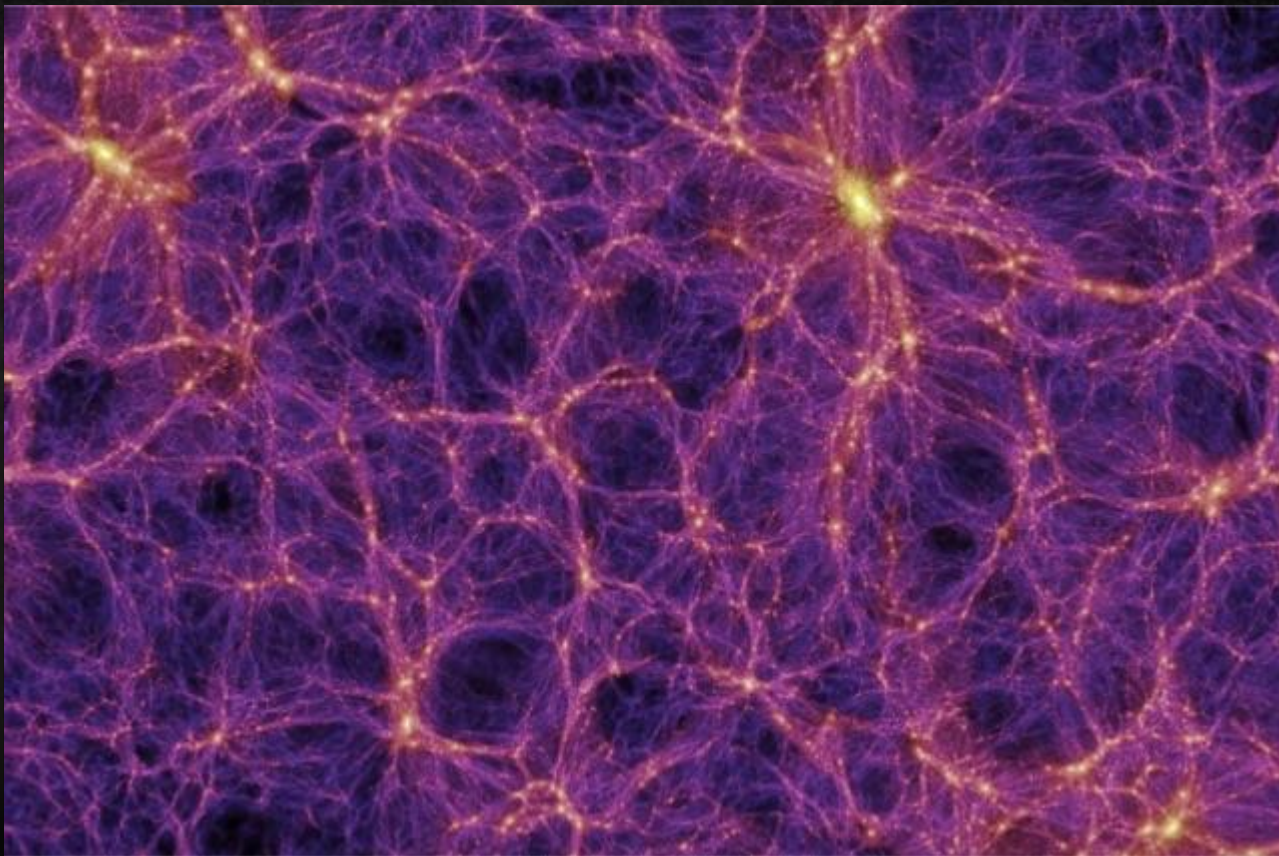
**POR QUÊ?**



- **Massa:** fundamental para a física e astronomia.
- **Resultados anteriores:** 500bi a 2,5 trilhões de  $M_{\odot}$

# Local Galactic Group

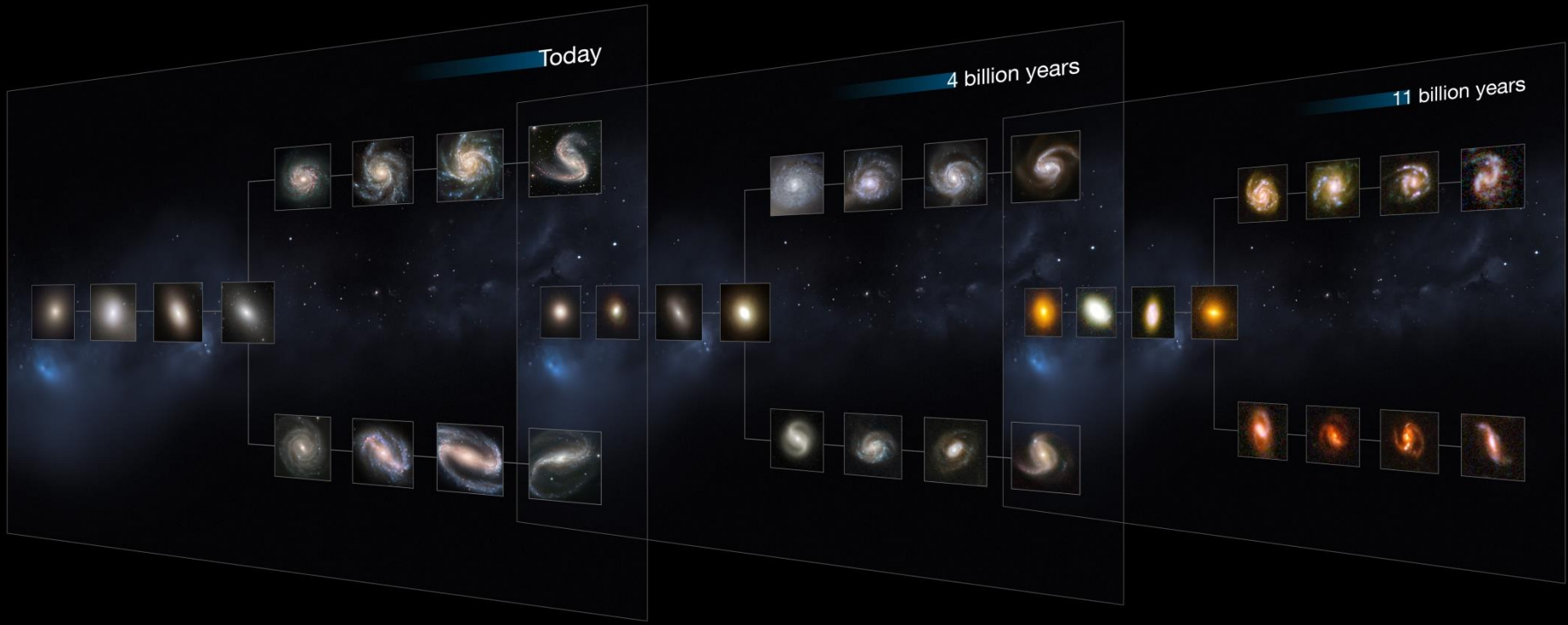




<https://www.universetoday.com/135954/largest-scales-milky-way-galaxy-middle-nowhere/>










**COMO MEDIR A MASSA DE UMA GALÁXIA?**

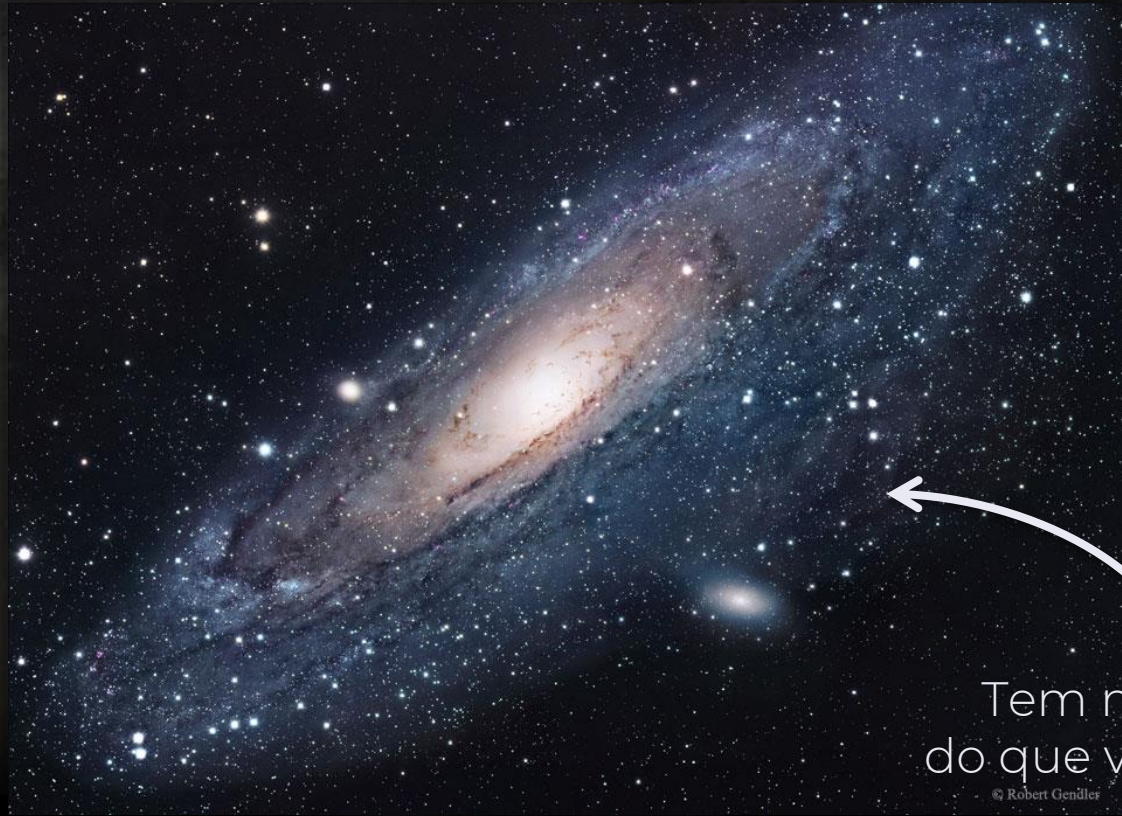


- Massa das estrelas



*Galáxia de Andrômeda*  
<https://apod.nasa.gov/apod/ap150830.html>

- Massa das estrelas 



Tem muito mais  
do que vemos brilhar

© Robert Gendler

*Galáxia de Andrômeda*  
<https://apod.nasa.gov/apod/ap150830.html>

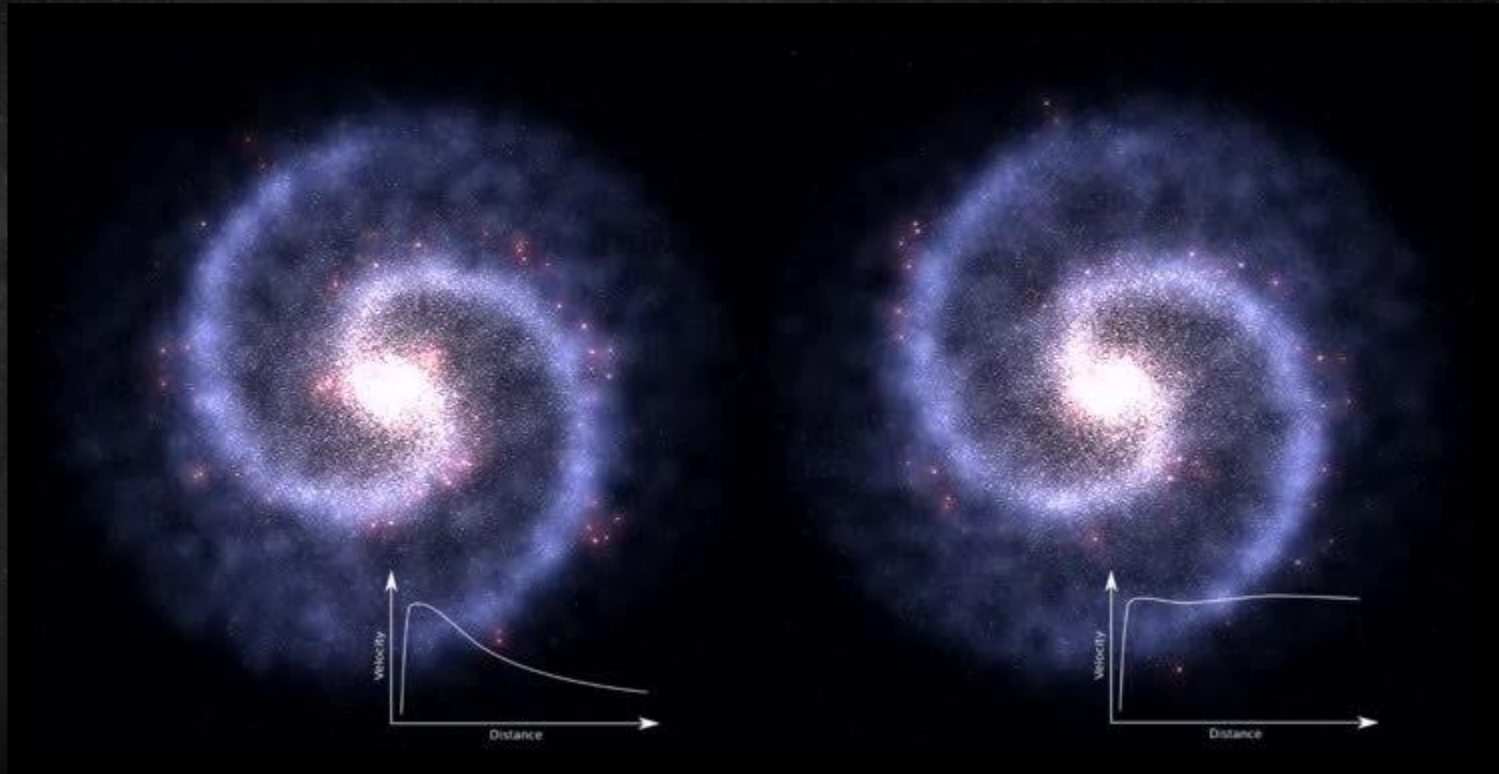
- Na astronomia: rotação determina a massa



<https://www.youtube.com/watch?v=vFpnaWcTrmk>



- Rotação da galáxia?





- Movimento das galáxias satélites



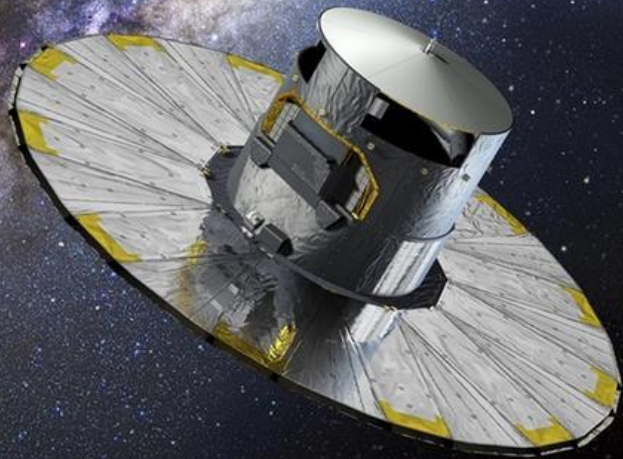
*Galáxia de Andrômeda*  
<https://apod.nasa.gov/apod/ap150830.html>



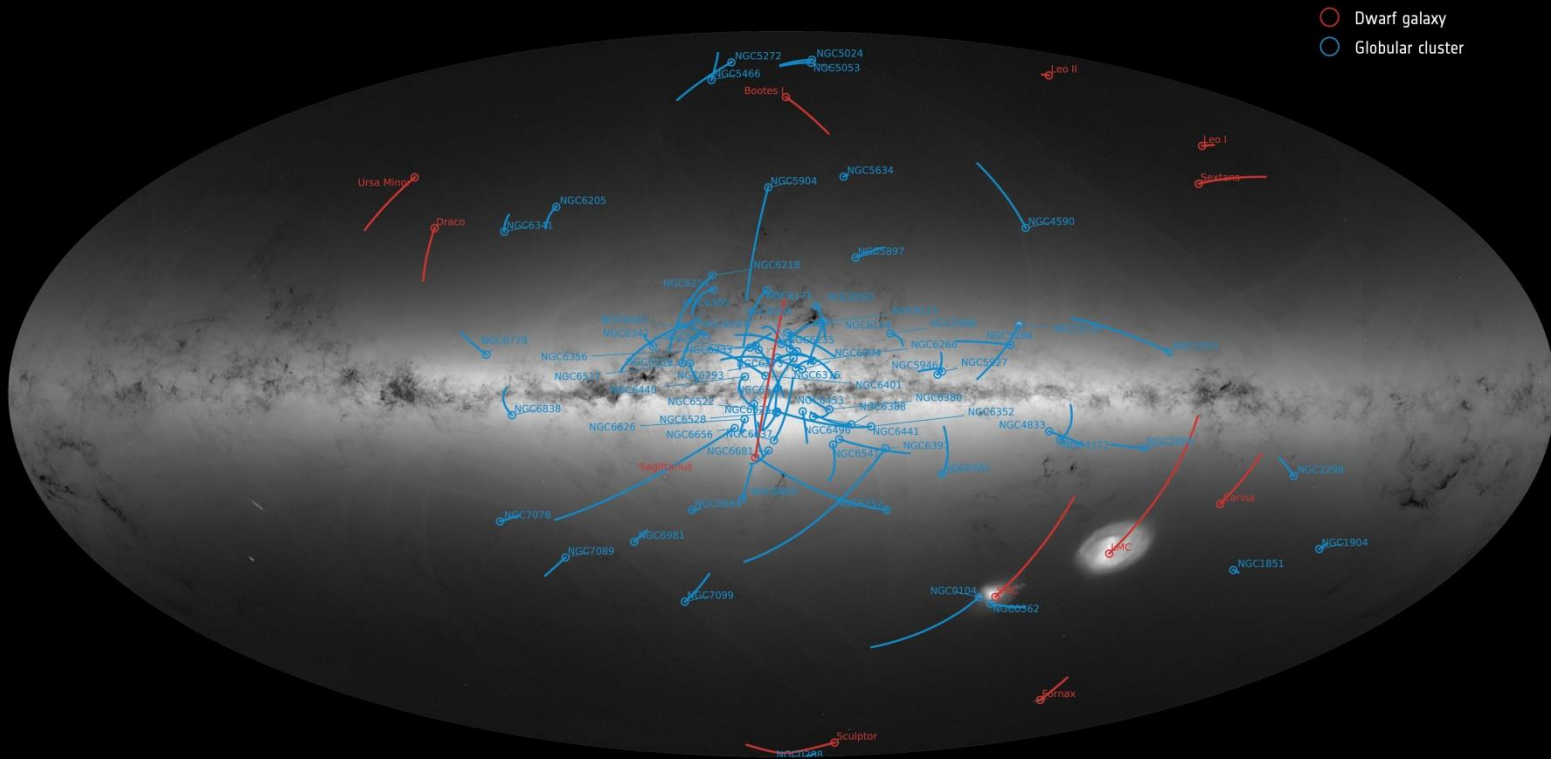


**E NA VIA LÁCTEA?**

# GAIA + HUBBLE



# → GAIA'S GLOBULAR CLUSTERS AND DWARF GALAXIES










<https://www.eso.org/public/images/eso0844a/>





**1,5 trilhões de M☉**





**1,5 trilhões de  $M_{\odot}$**   
ou  
 **$2 \times 10^{40}$  fuscas azuis**



# Referências

- [https://www.astro.umd.edu/~richard/ASTRO620/QM\\_chap5.pdf](https://www.astro.umd.edu/~richard/ASTRO620/QM_chap5.pdf)
- <https://www.universetoday.com/35565/gravity-on-other-planets>
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Obrigada 😊

