

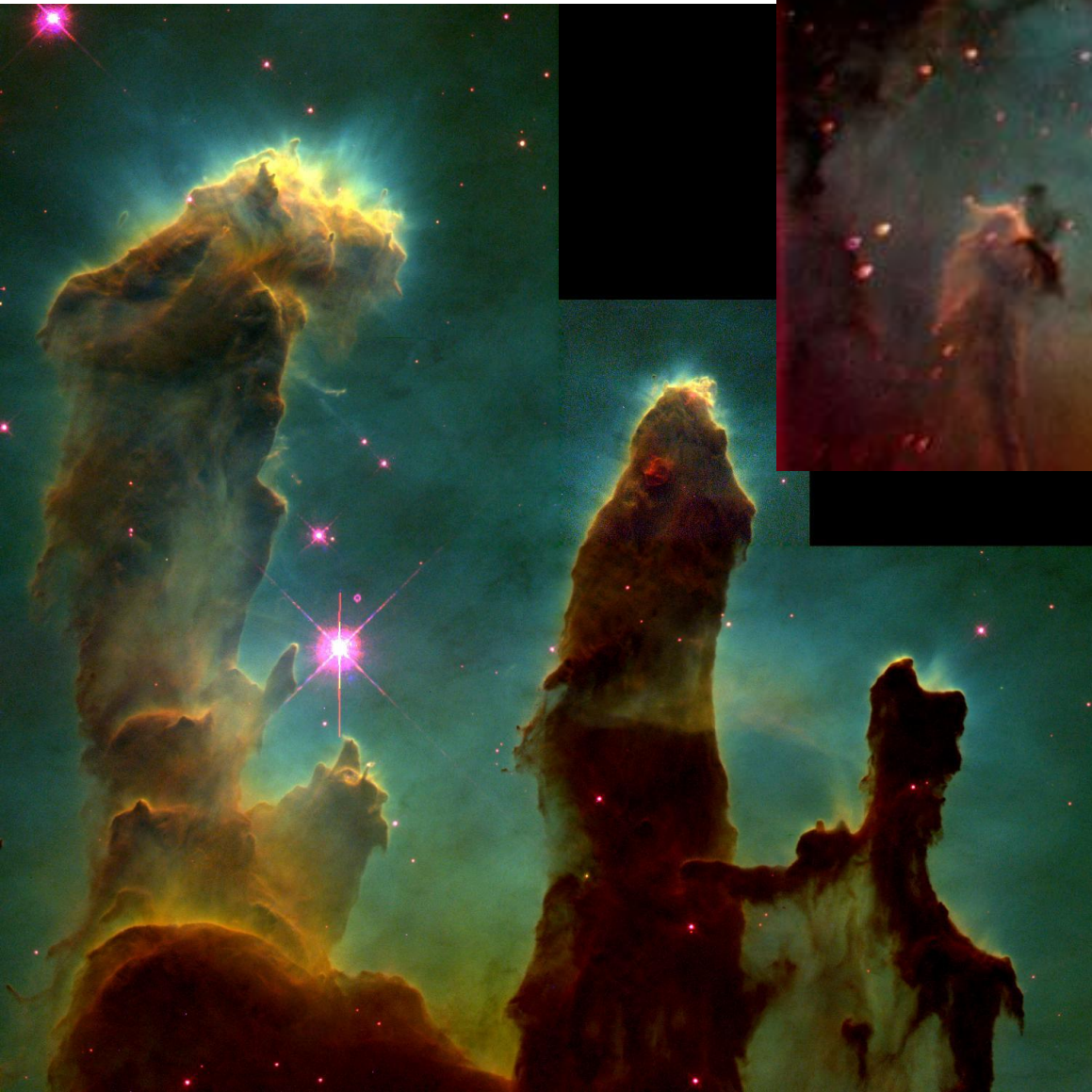
AGA 0100

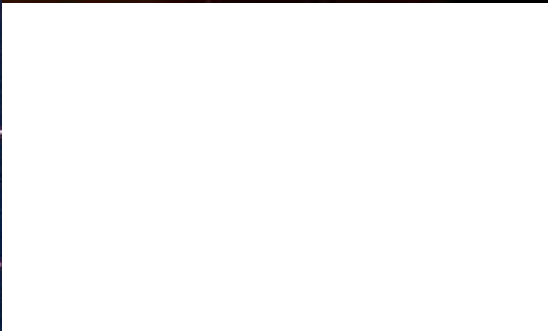
11.2 Nebulosas: como as estrelas nascem e morrem

Regiões H II – Berçários de estrelas

- Nuvens moleculares colapsadas
- Estrelas jovens
- Ionização (+ reflexão) das nuvens pelas estrelas quentes.

M16 – A Nebulosa da Águia



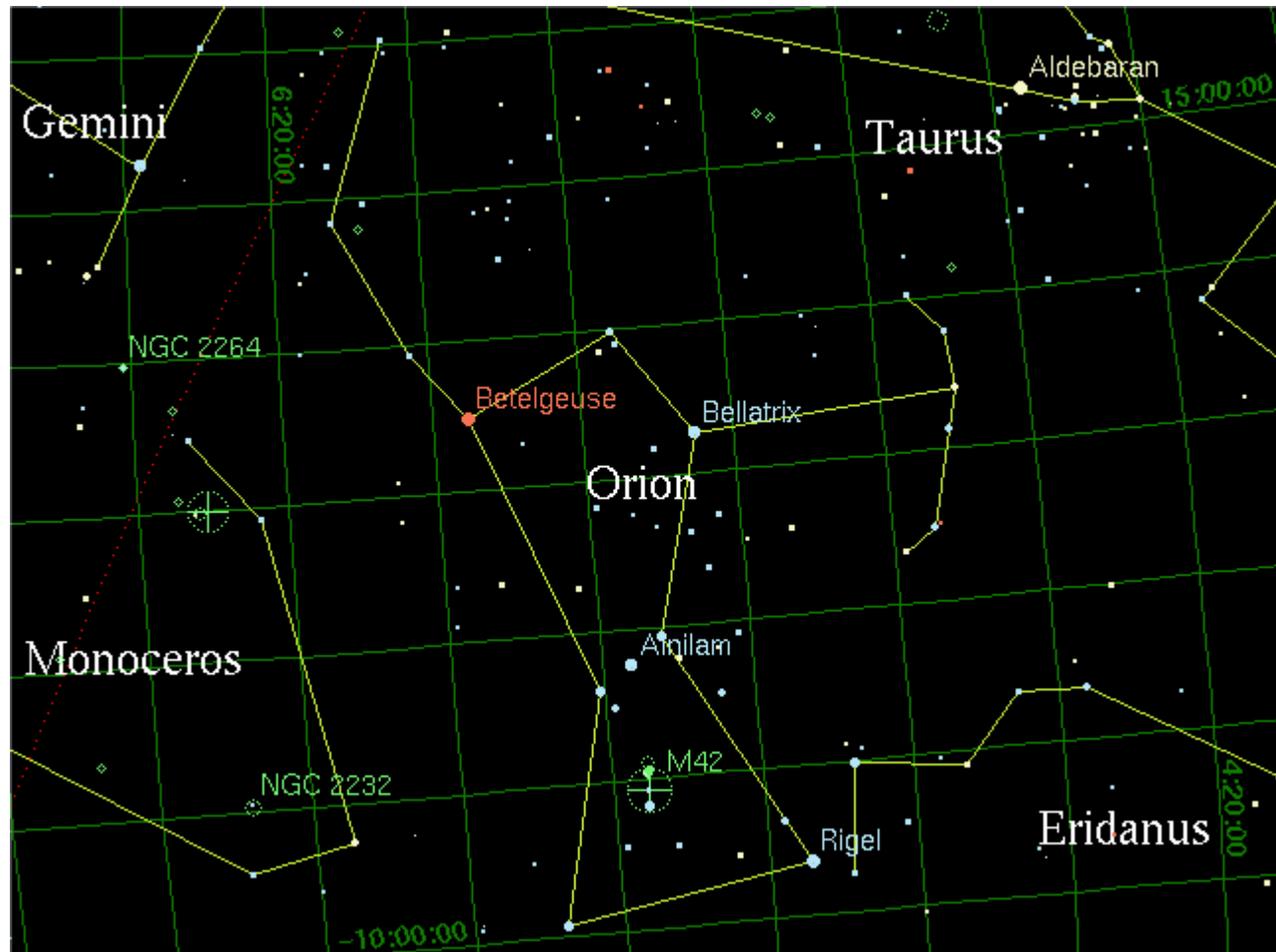


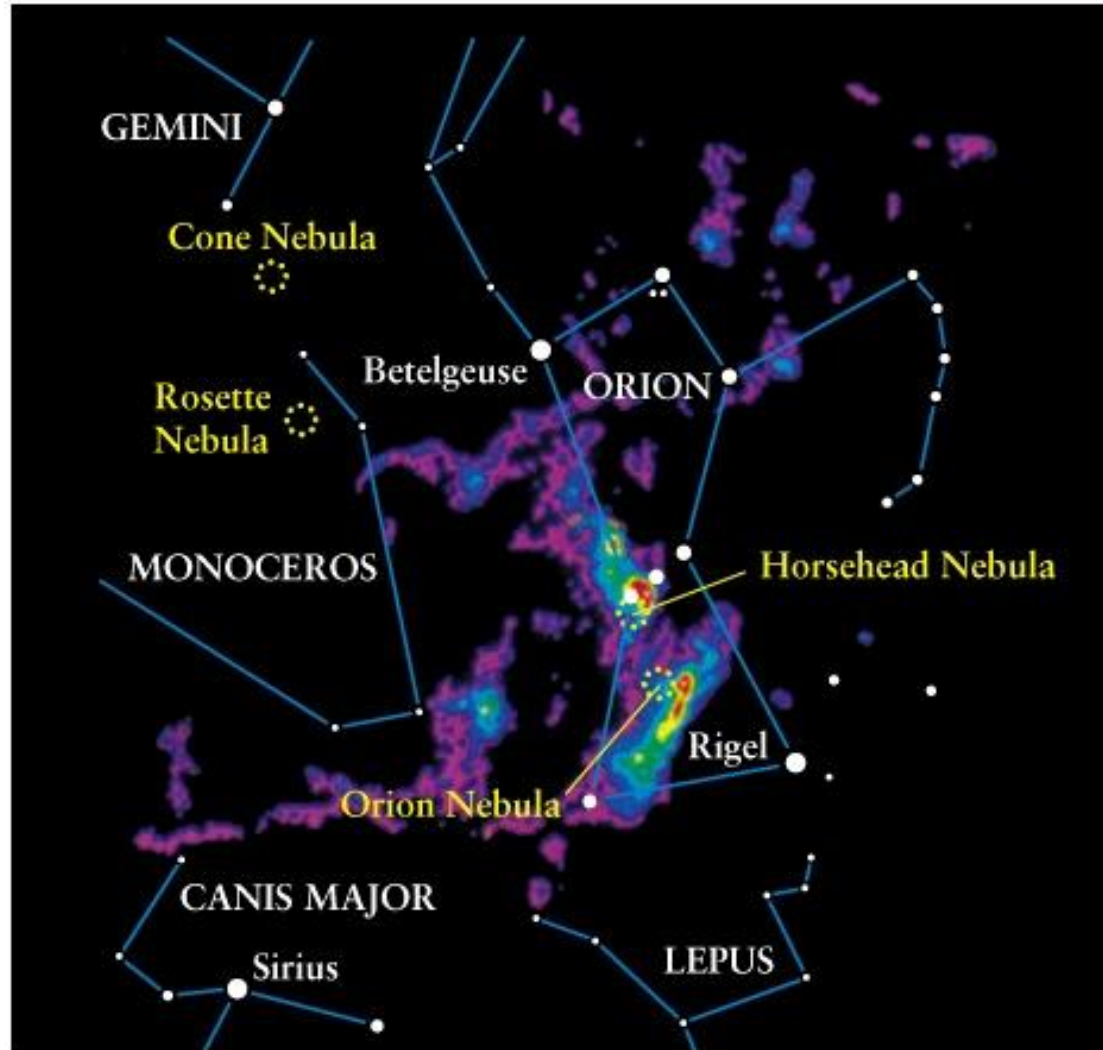
NGC 3603

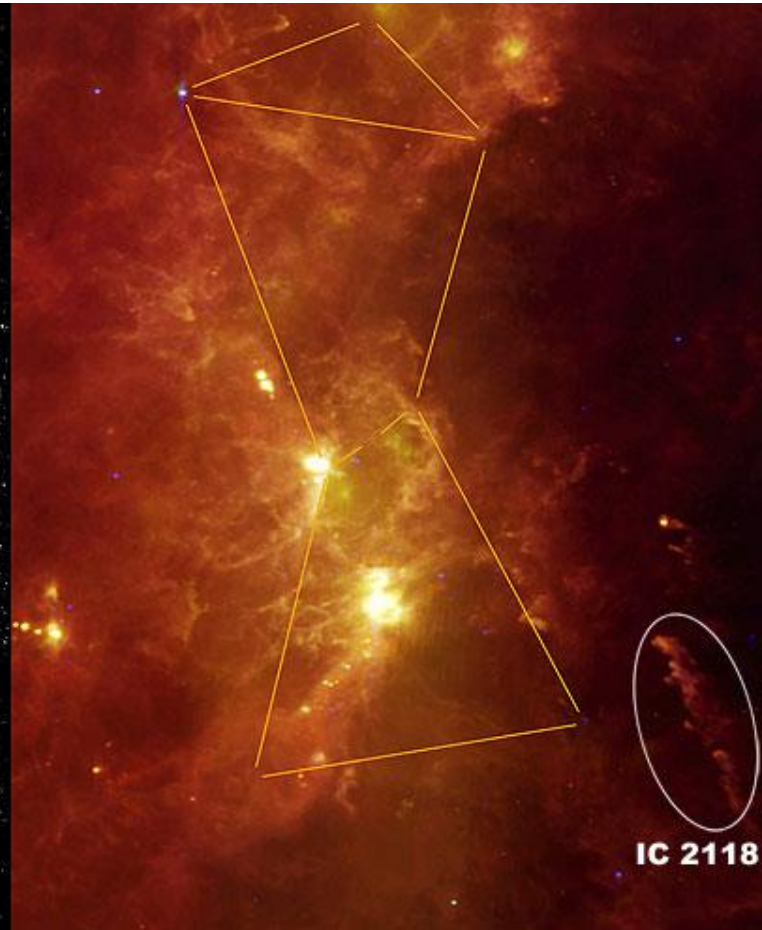
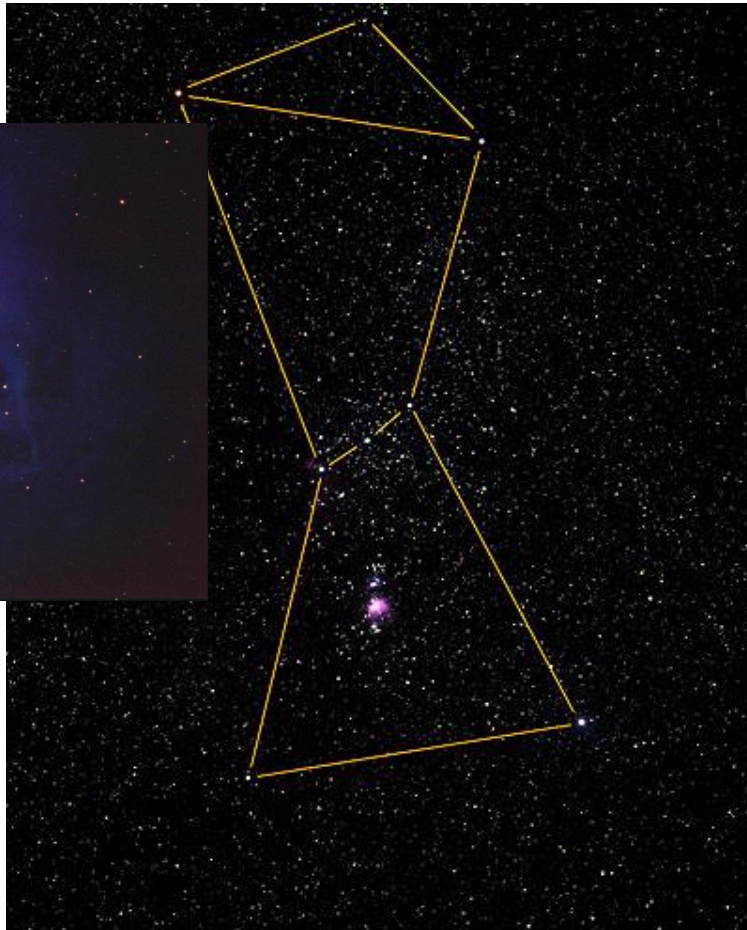


A nuvem molecular de Órion

- Distância – 1500 a.l.
- Dimensão – 100 a.l.
- Massa – 200 000 Msol
- Onda de formação de estrelas iniciou há 12 milhões de anos
- Estrelas das Três Marias (Cinturão) tem idade de 8 milhões de anos



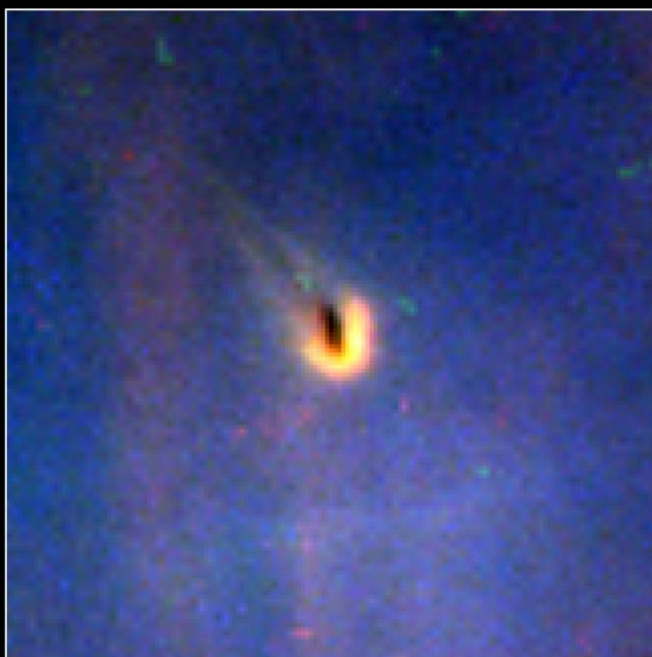
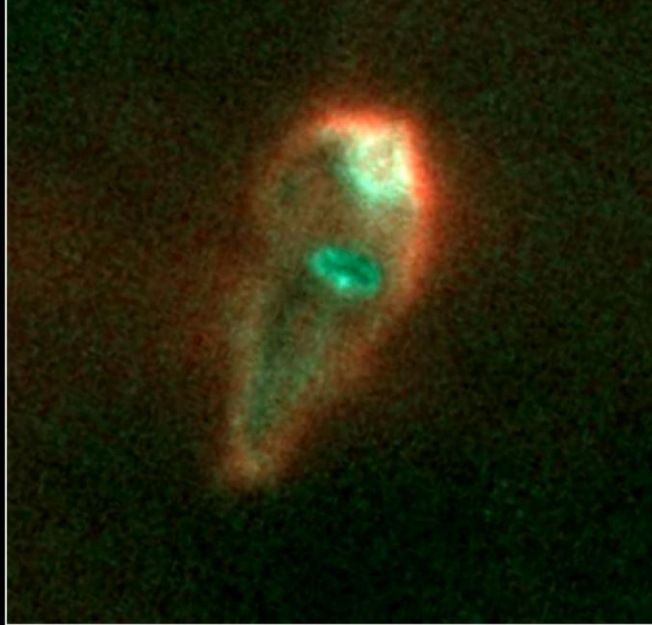




Formação de estrelas: 2200 estrelas em 12 a.l.

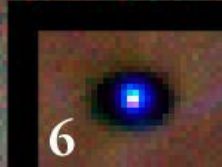
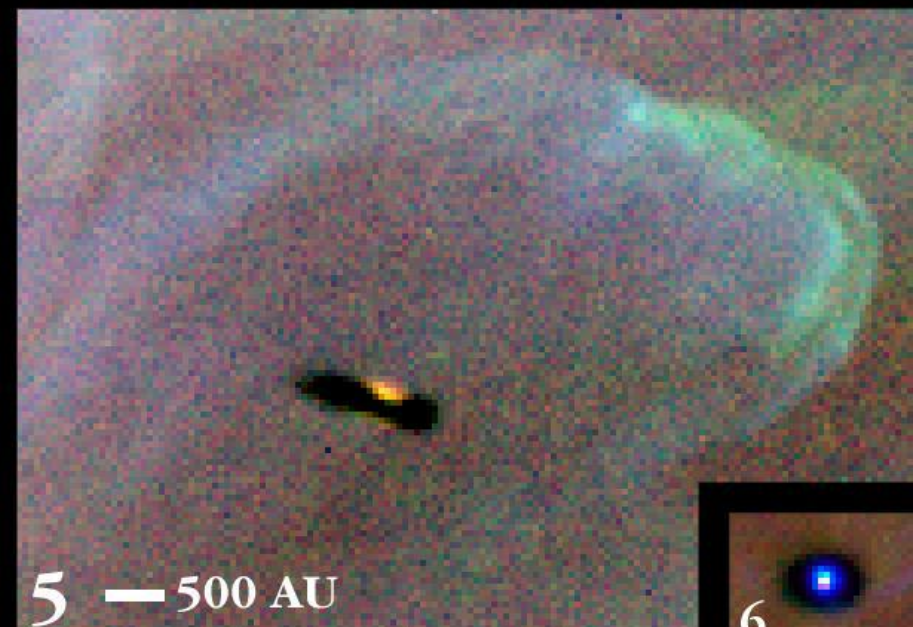
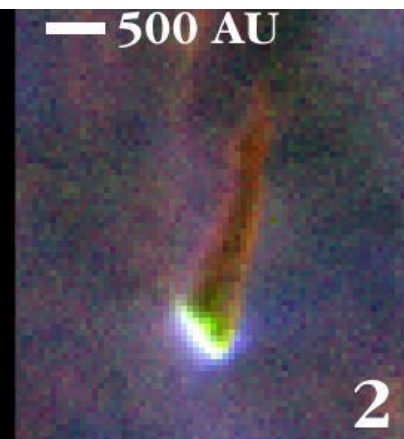
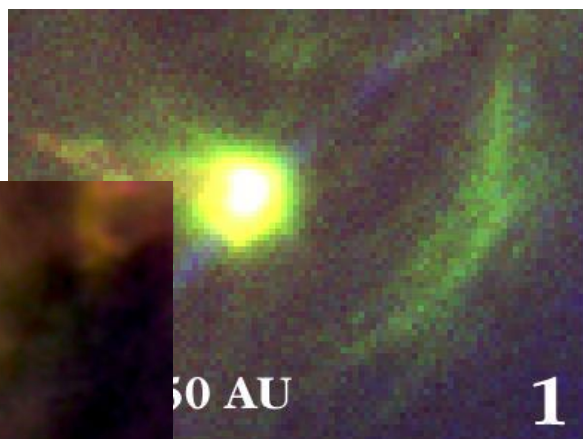
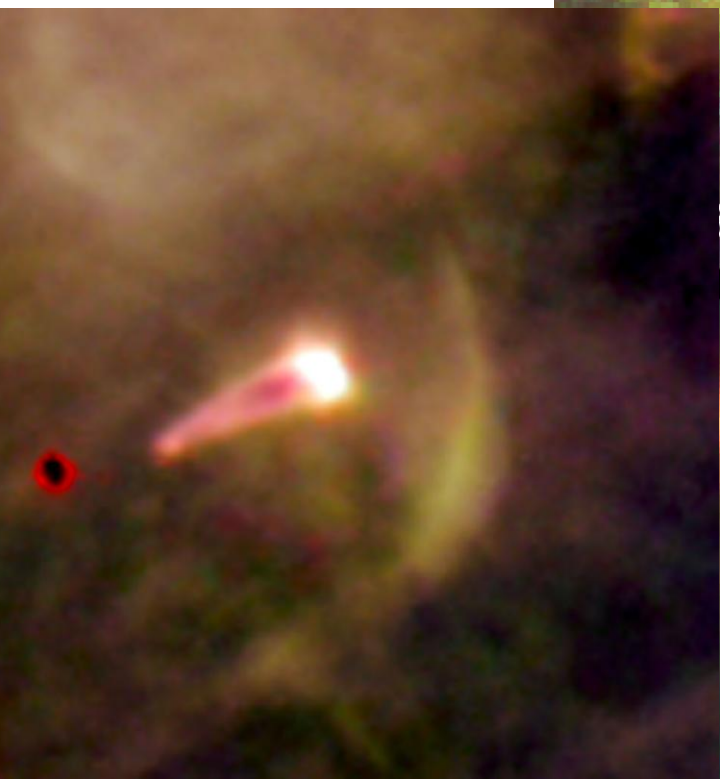




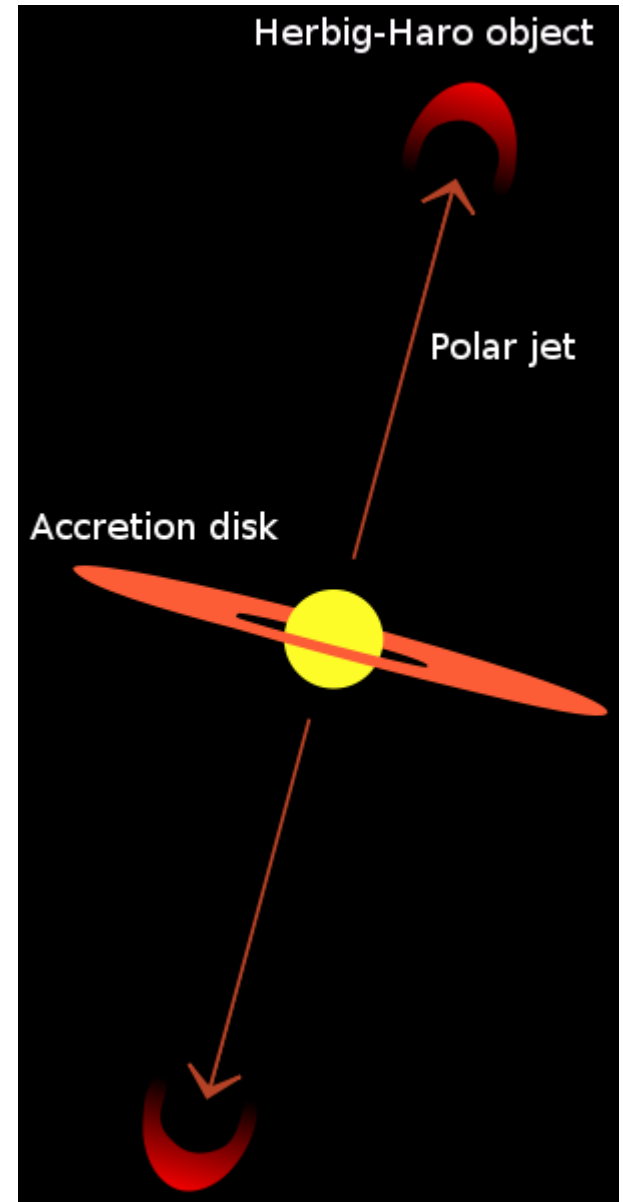


Protoplanetary Disks in the Orion Nebula
Hubble Space Telescope • WFPC2

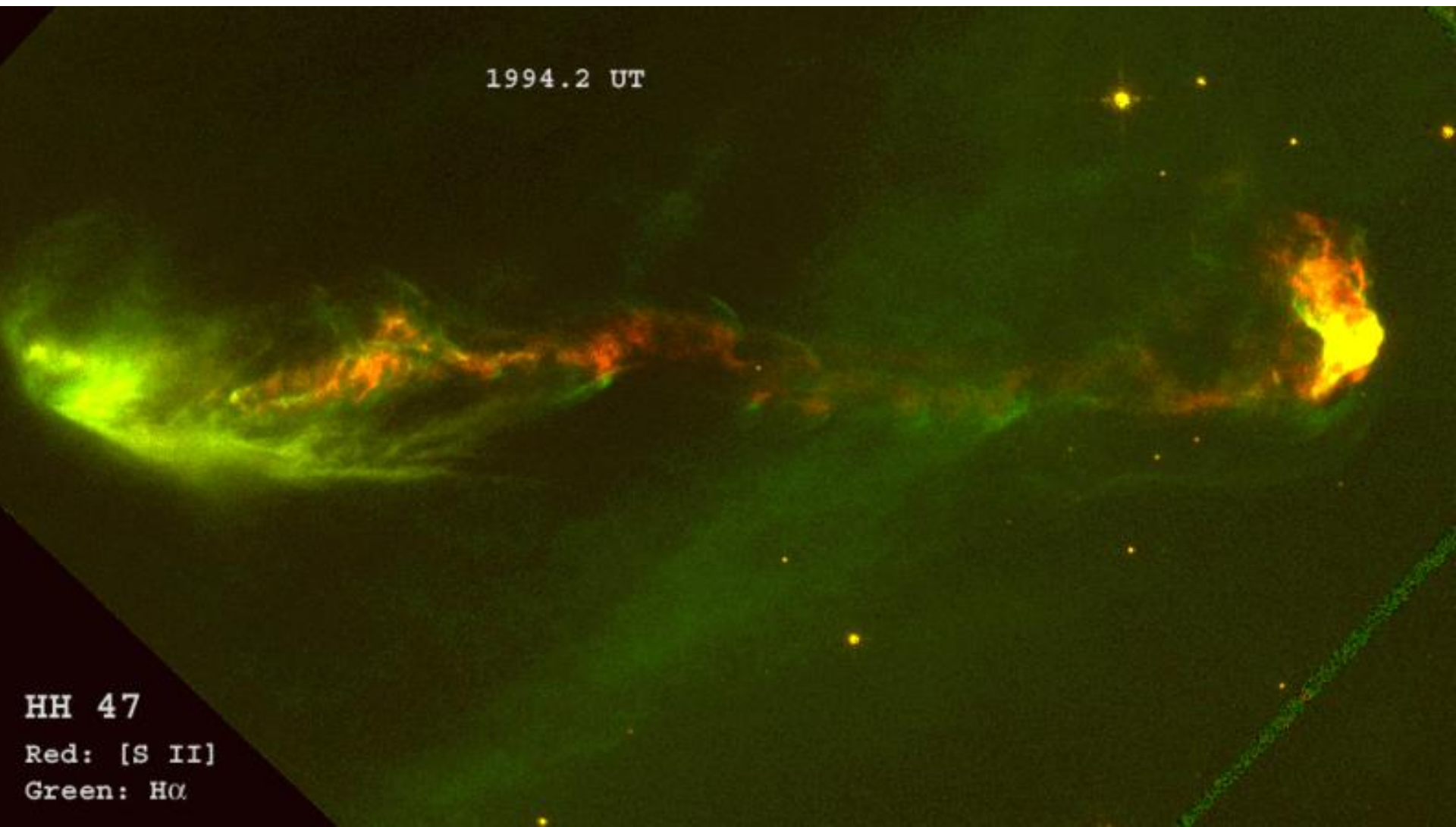




HH 47



1994.2 UT



HH 47

Red: [S II]

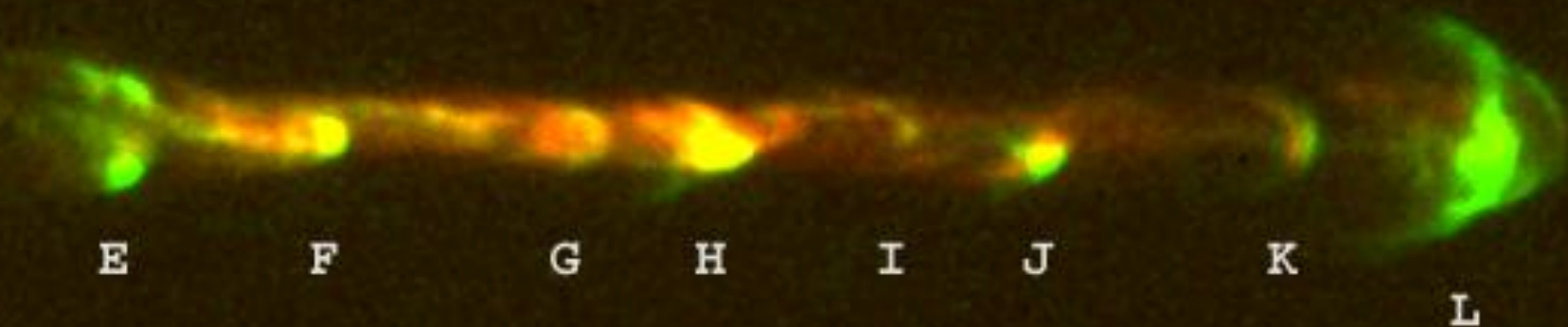
Green: H α

HH 111

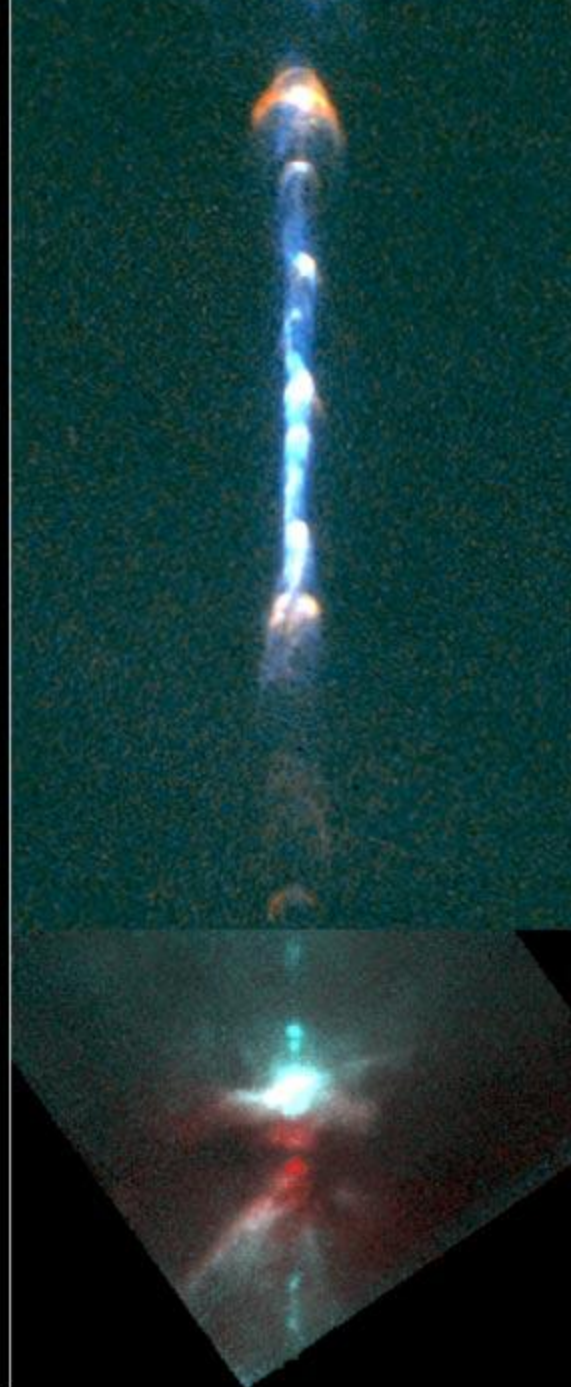
1994.9 UT

Green: $H\alpha$

Red: [S II]



1000 AU

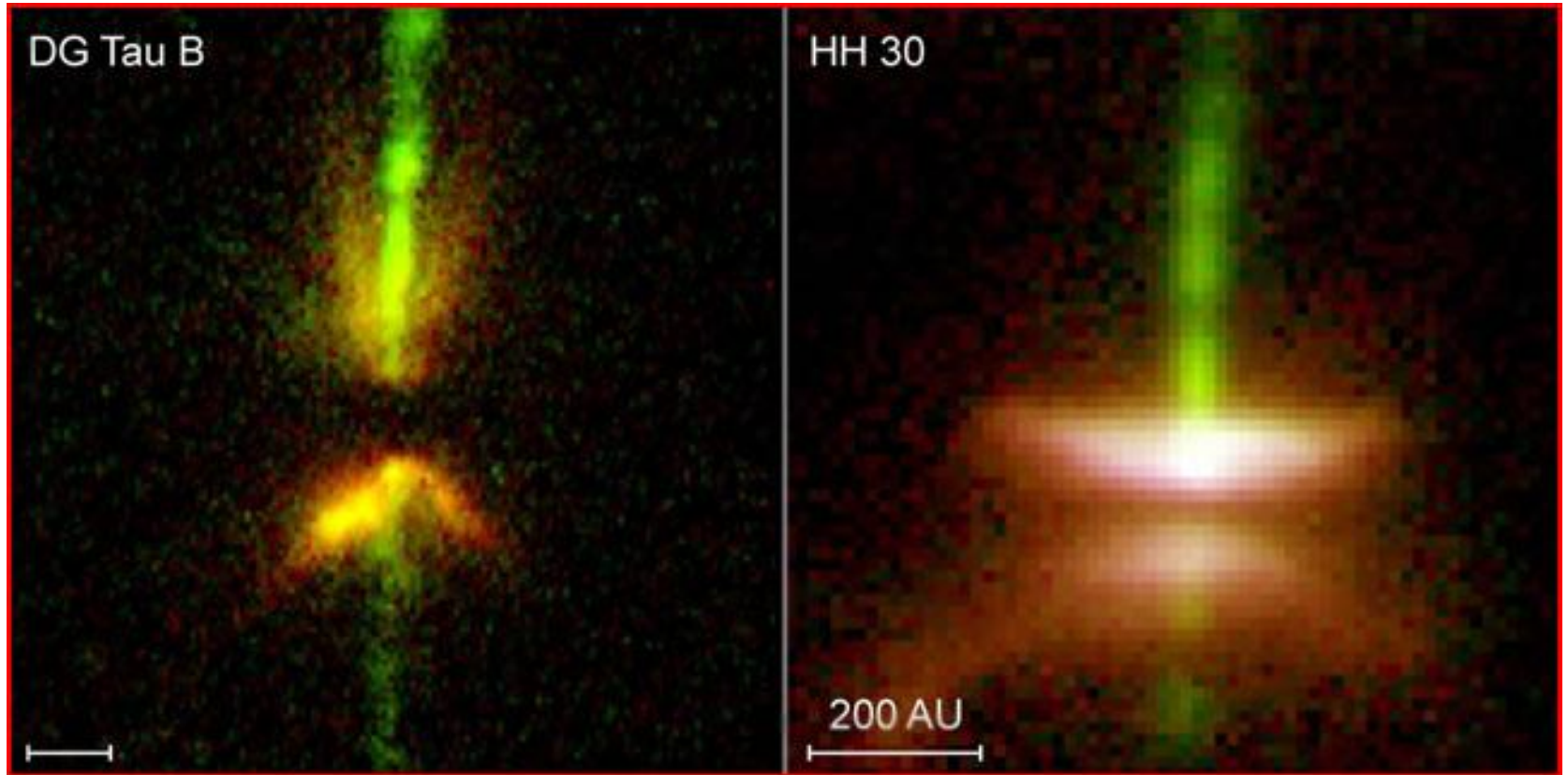


Infrared • NICMOS

HH111
Hubble Space Telescope
WFPC2 • NICMOS

RAFGL 2688, a nebulosa do ovo





HST/NASA

HH 110



Estrelas jovens

- Estrelas Herbig-Haro (HH)
- Estrelas T Tauri





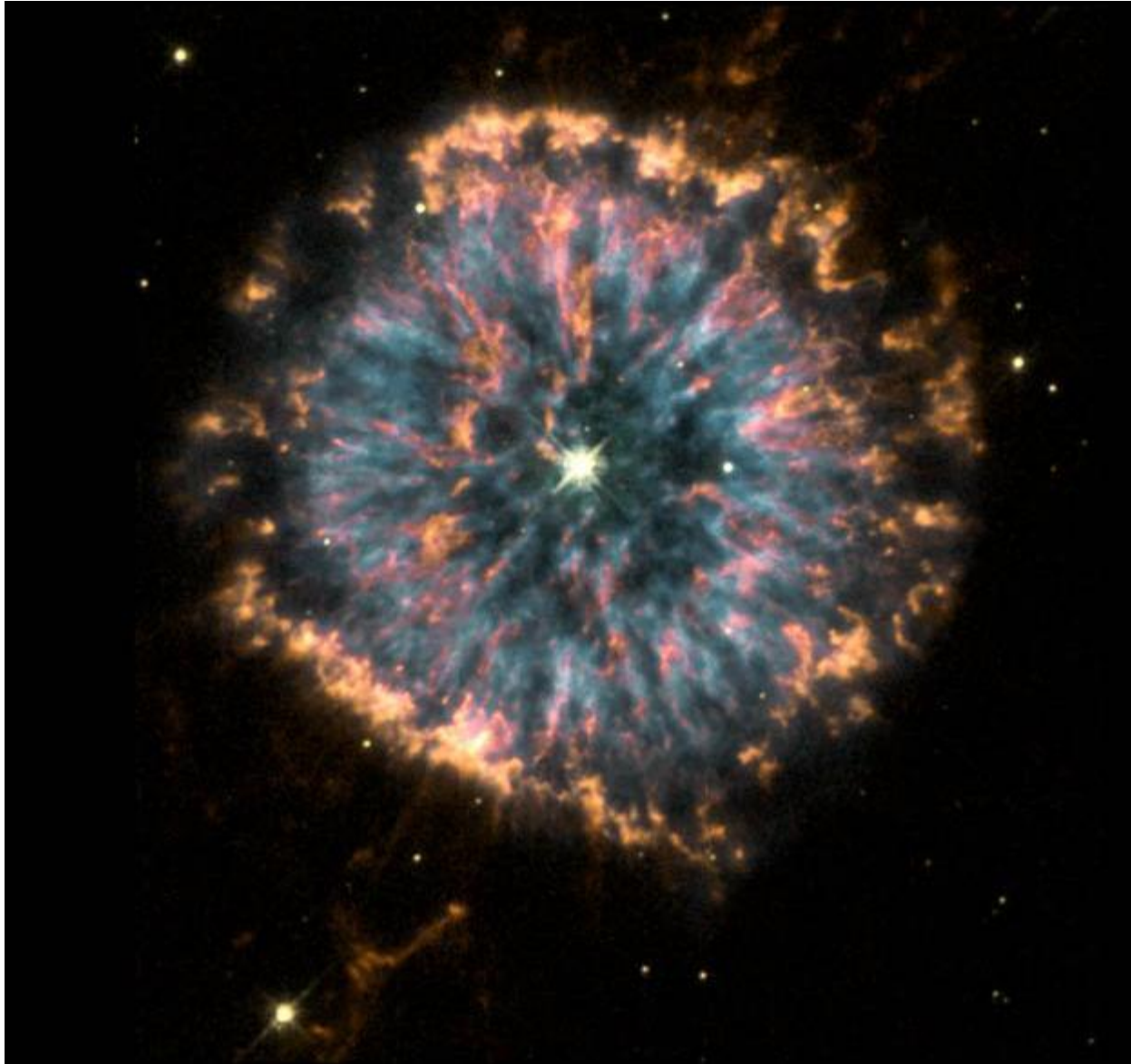
Nebulosas planetárias

- Mais de 1500 NP na Via Láctea
- A velocidade de expansão é de 20-30 km/s
- Diâmetros típicos de 1 ano-luz
- Duração ~50 000 anos

A nebulosa do esquimó – NGC 2392 HST/NASA



NGC 6751



A nebulosa do olho do gato – NGC 6543

HST/NASA

HYPESCIENCE.COM



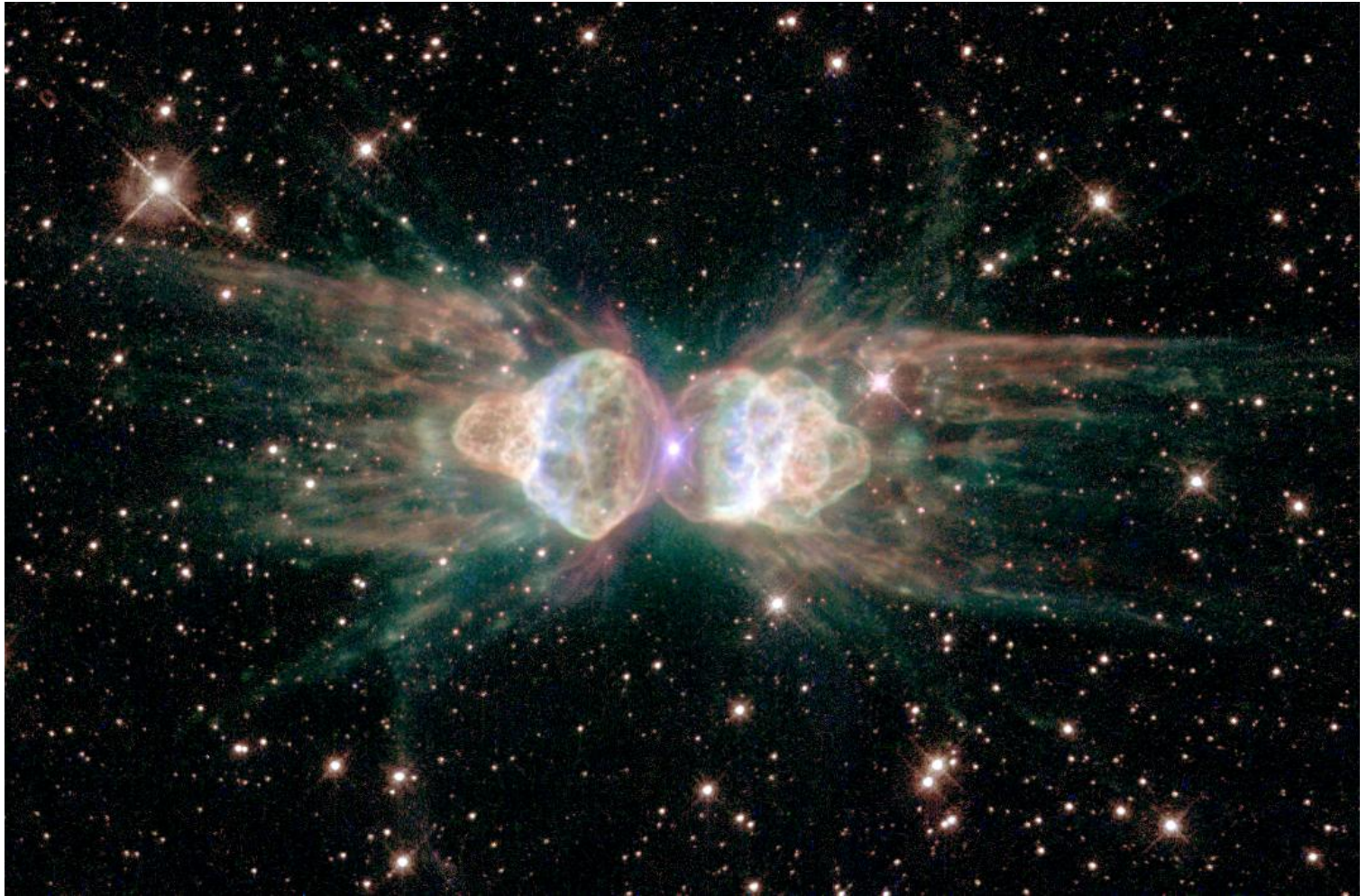
Nebulosa da borboleta

NGC 6302

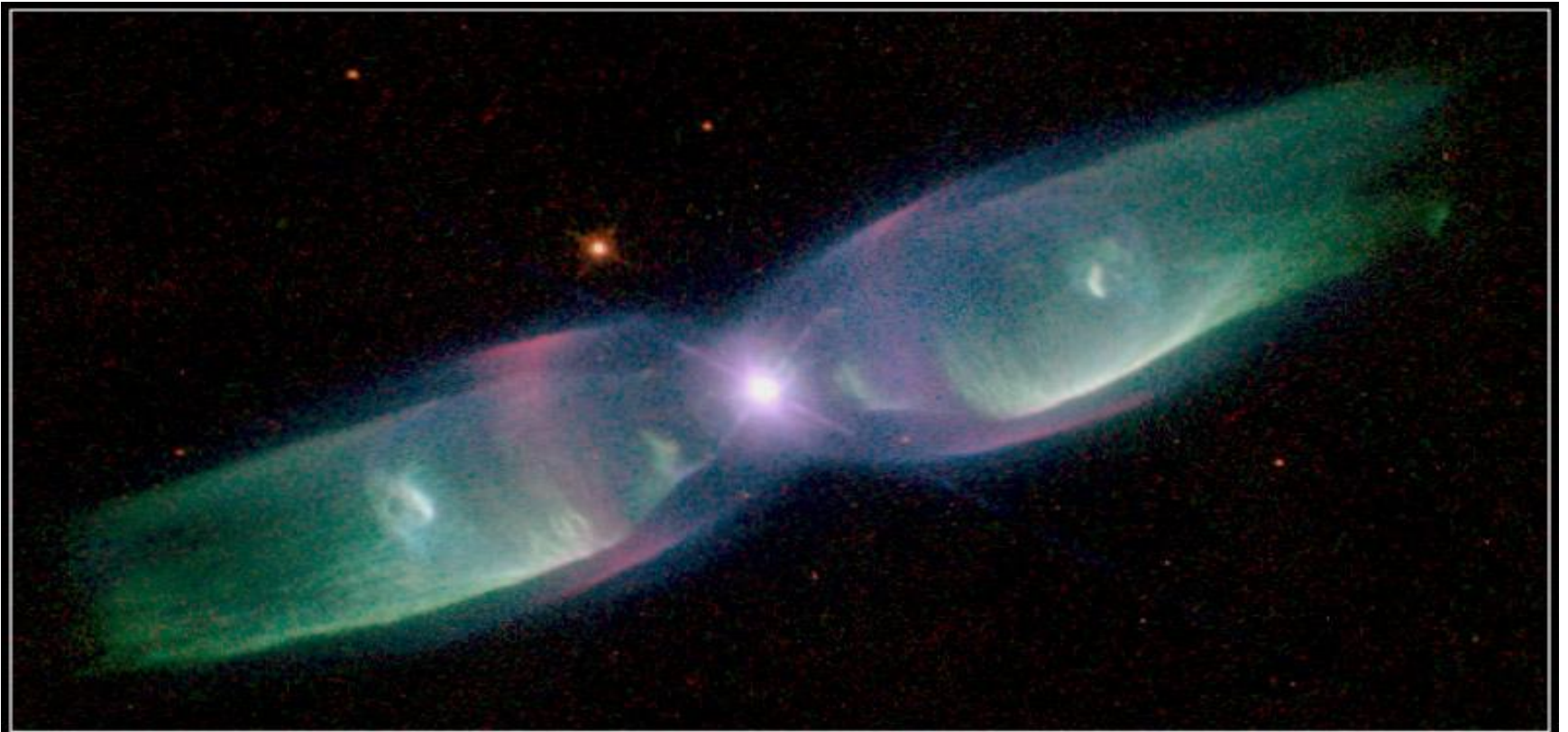
HST/NASA



Mz 3 – A nebulosa da formiga



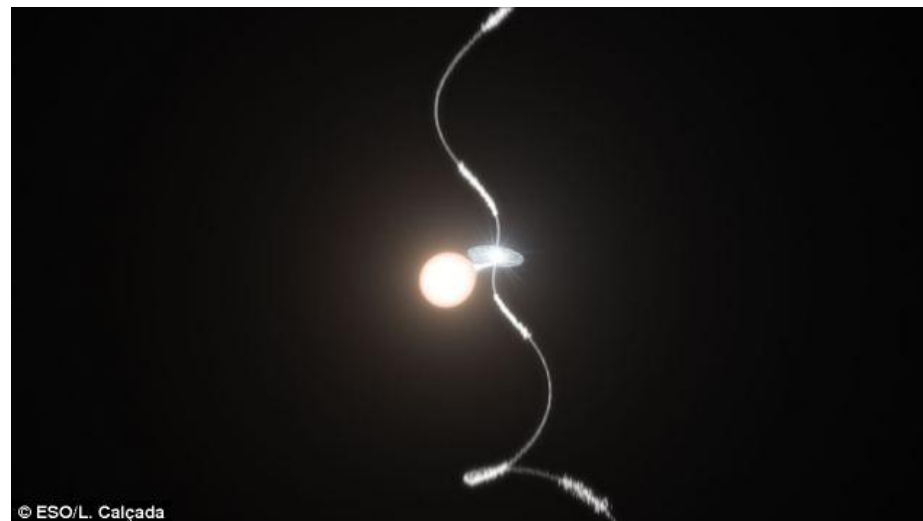
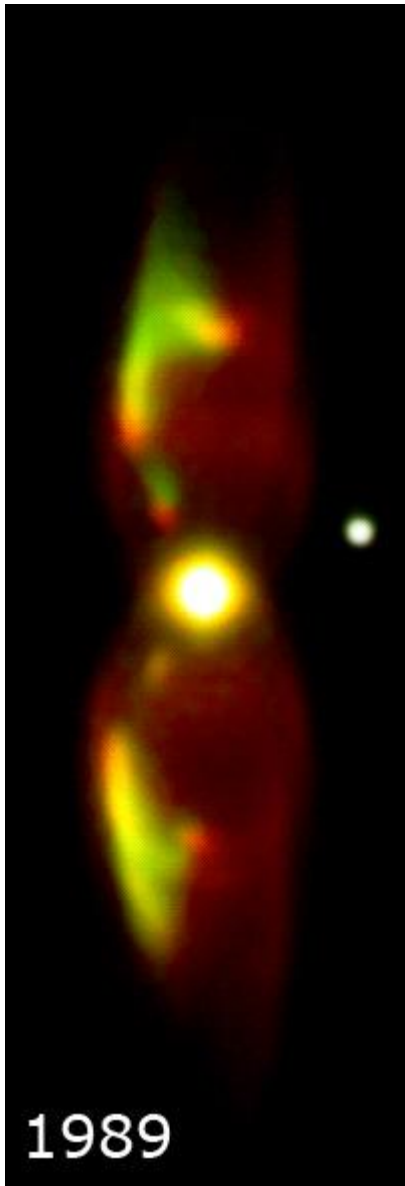
HST/NASA



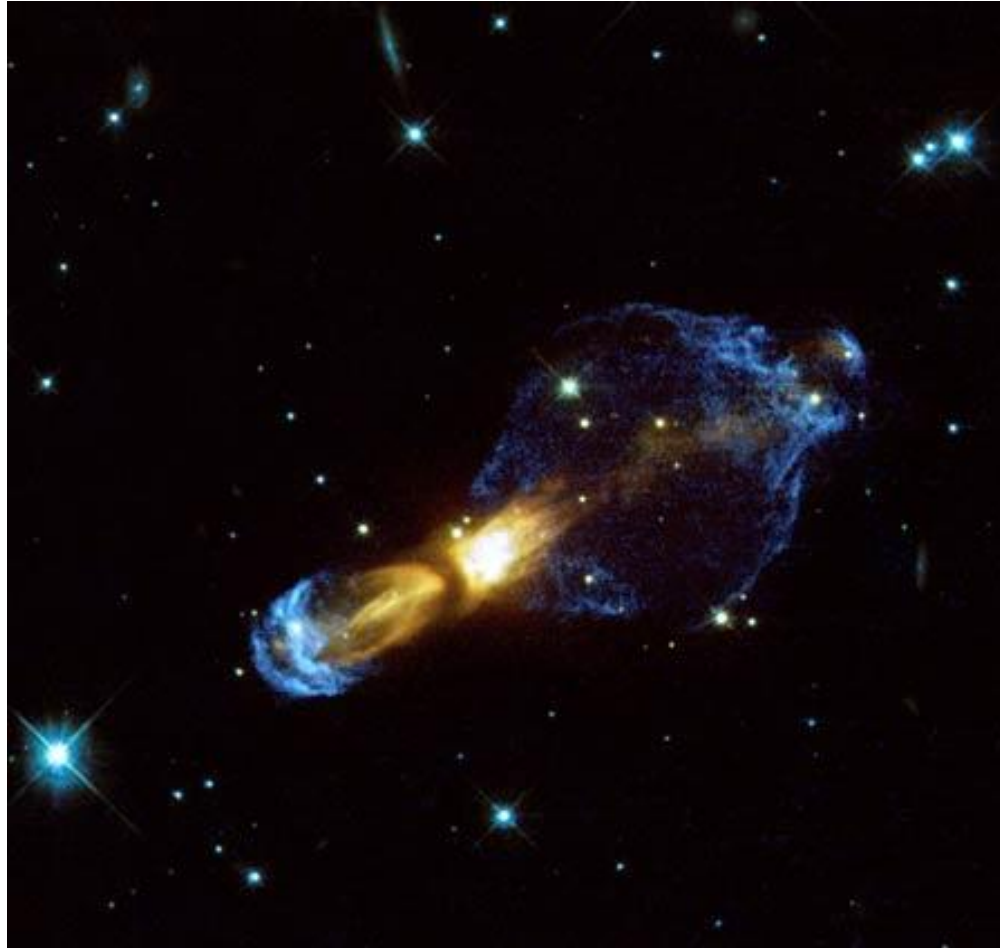
Planetary Nebula M2-9
PRC97-38a • ST ScI OPO • December 17, 1997
B. Balick (University of Washington) and NASA

HST • WFPC2

M2-9 – animação da precessão do jato Wikipedia



Nebulosa do ovo podre – Calabash (OH 231.84 +4.22);
nebulosa proto-planetária HST/NASA



Restos de supernovas

Supernova 1987A



