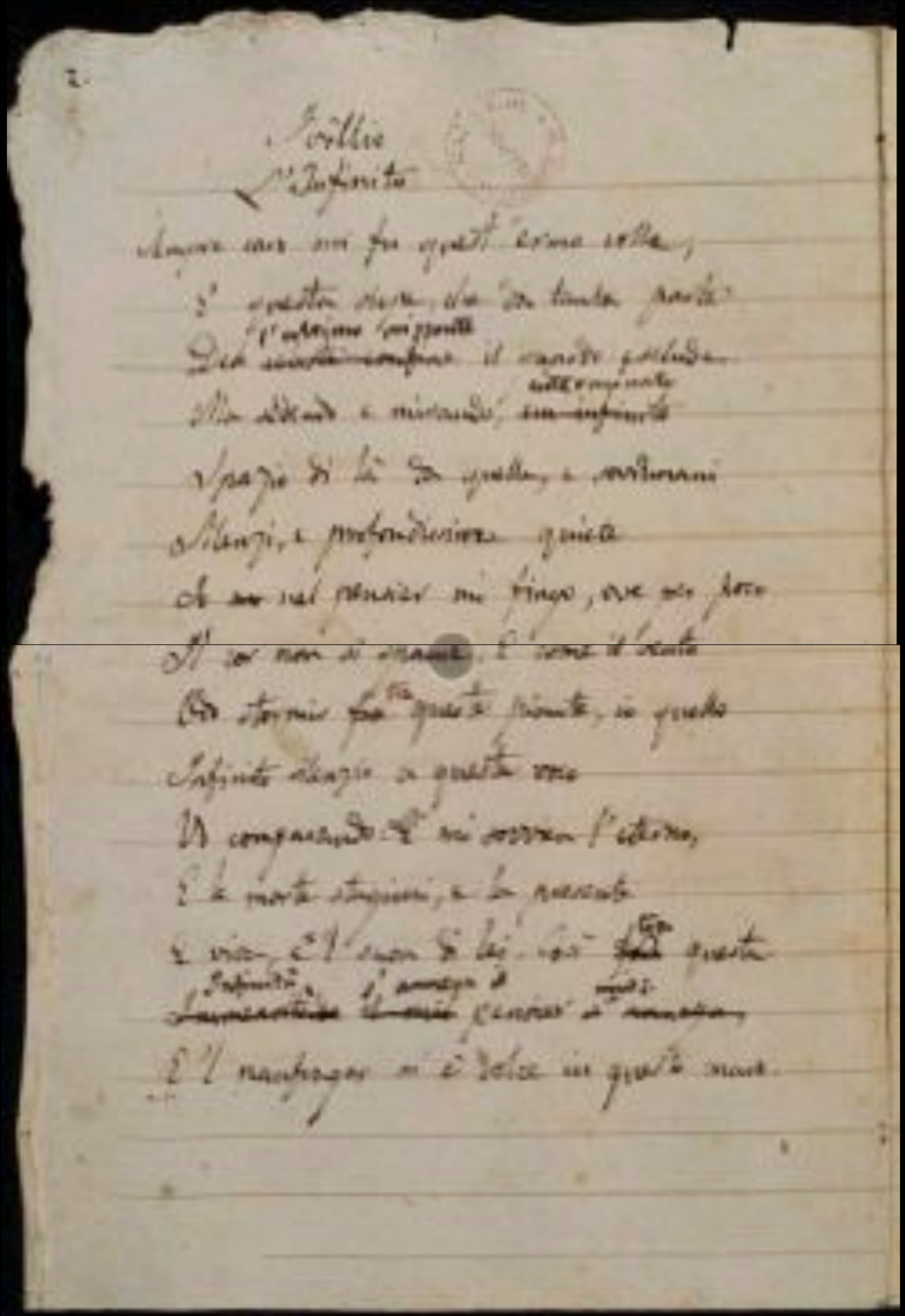
Desideriamo cieli diversi …

che non siano muti,

ma scrigni di misteriosi messaggi



che ci parlino dell'infinito

e siano motore

del nostro

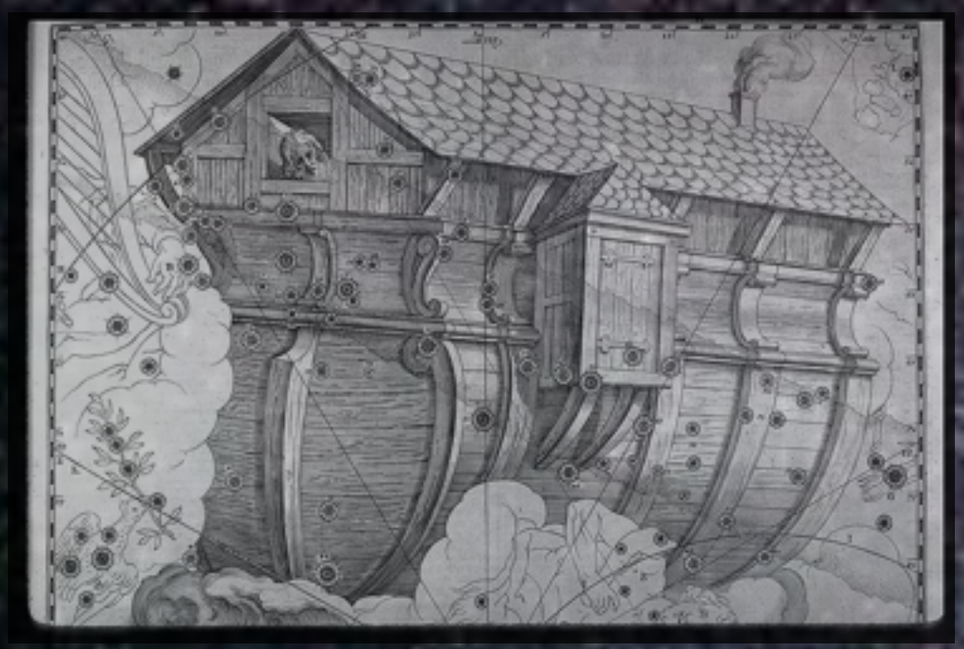
cercare

Le costellazioni danno un volto all'ignoto

scandiscono il tempo
orientano il viandante notturno

Societa` Astronomica
G. V. Schiaparelli

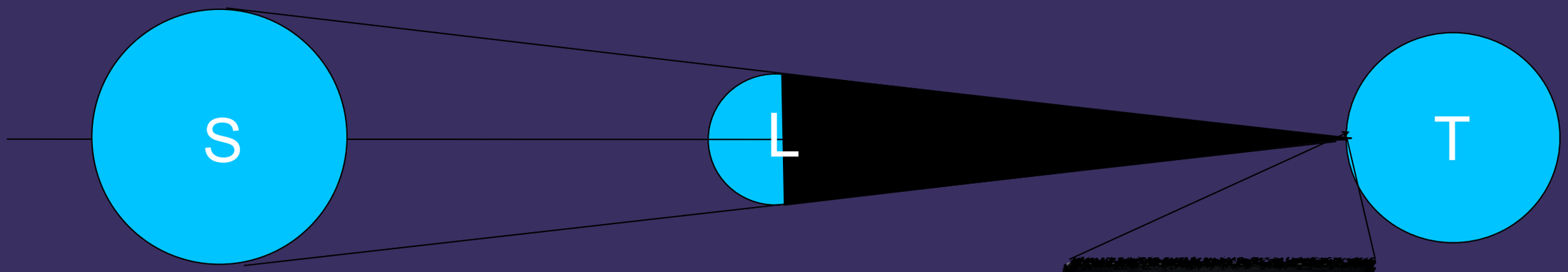
In viaggio tra le stelle, cosi` vicine, cosi` lontane ...



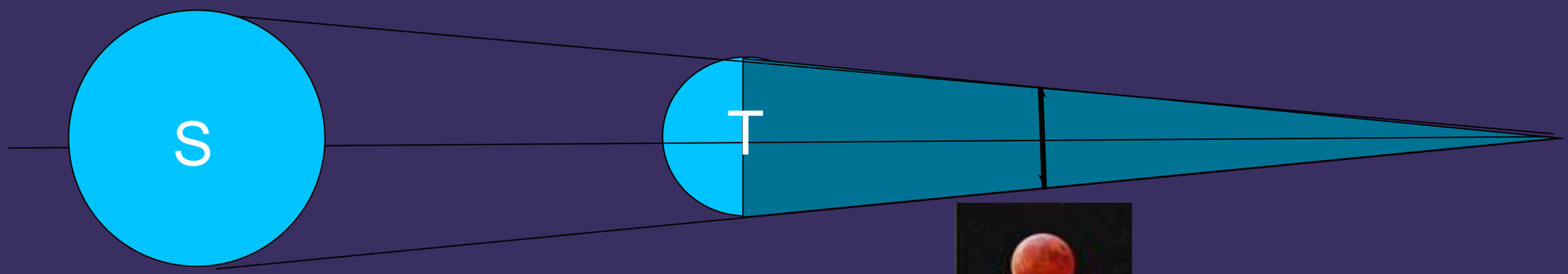
Luca G Molinari

S. Monte, 11 aprile 2015

La distanza Terra - Luna (Ipparco, II sec a.C.)



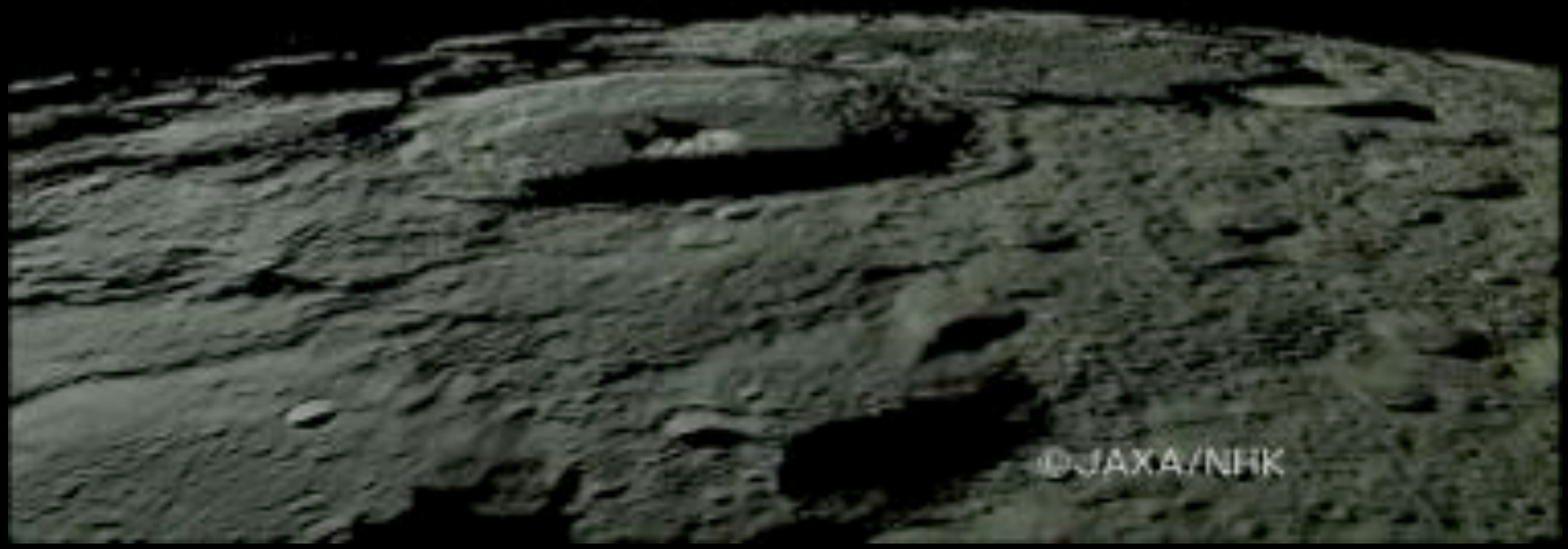
$ST : D_{sole} = LT : D_{luna}$



$D_{umbra} = 8/3\ D_{luna}$

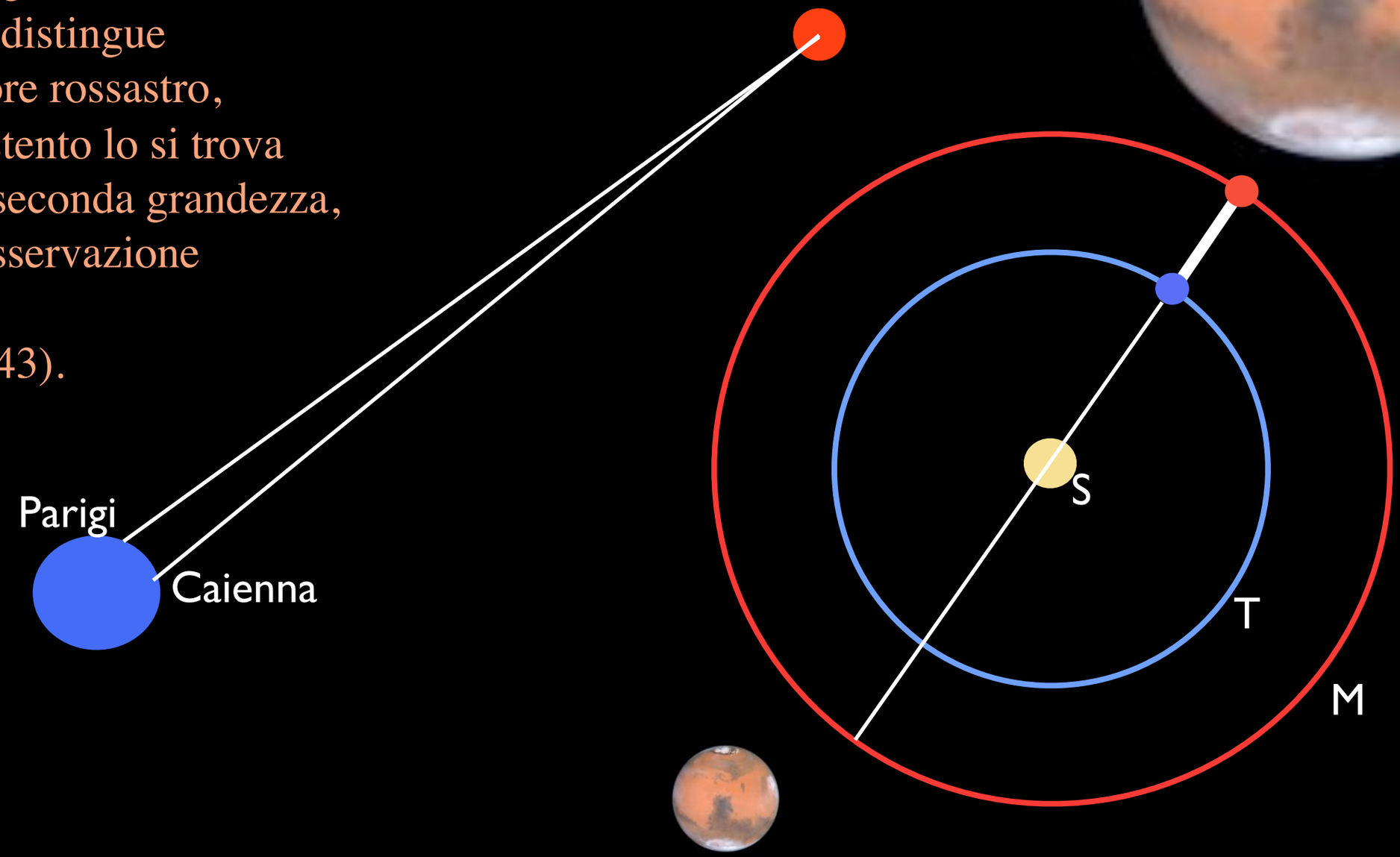
$D_{luna}/D_{terra} = 11/3$

$TL = 60\ D_{terra}$

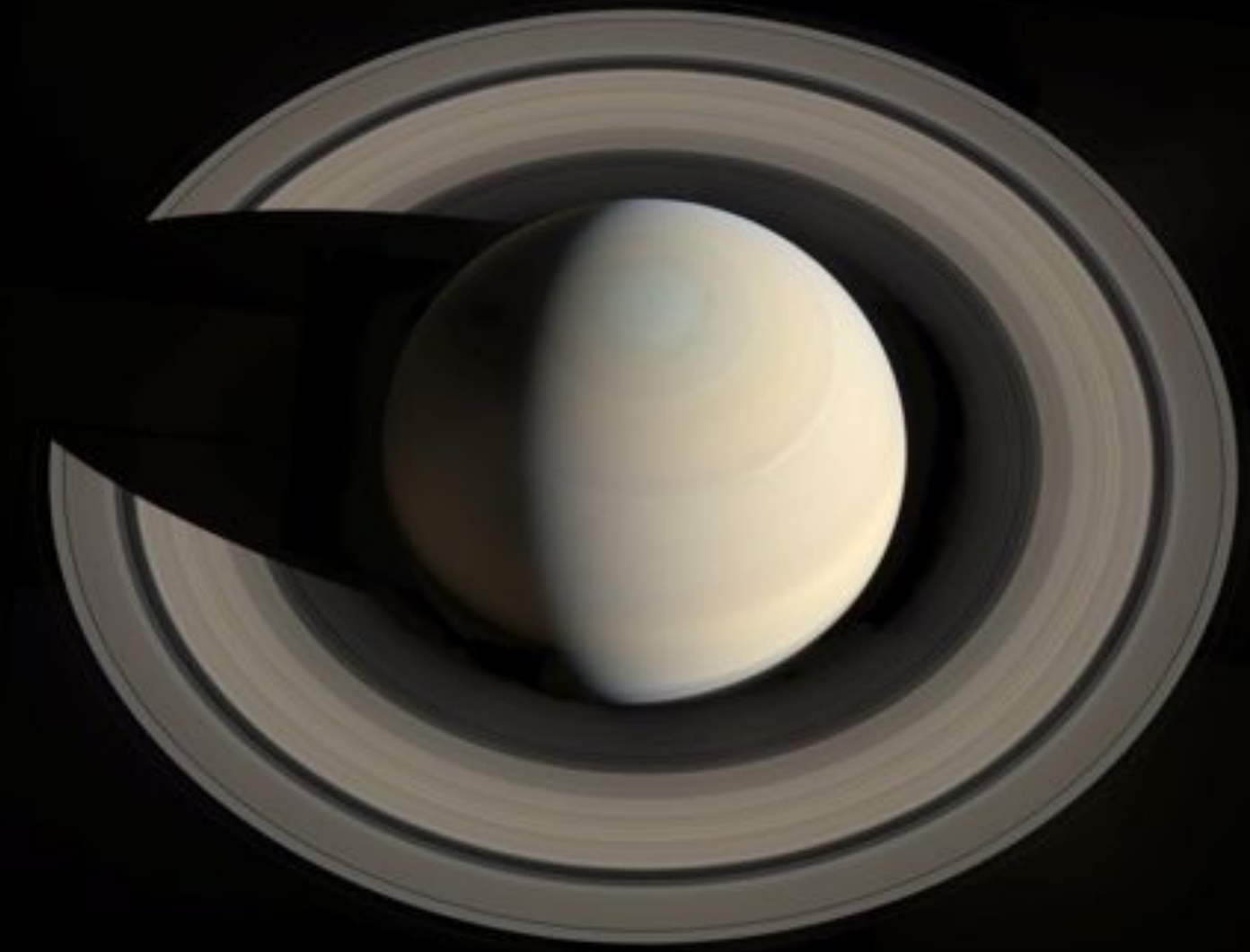

©JAXA/NHK

La distanza Terra - Marte
Gian Domenico Cassini
(1625-1712)

... Marte di notte sembra
eguagliare per grandezza
Giove, e se ne distingue
solo per il colore rossastro,
e invece la` a stento lo si trova
tra le stelle di seconda grandezza,
dopo attenta osservazione
coi sestanti...
Copernico (1543).



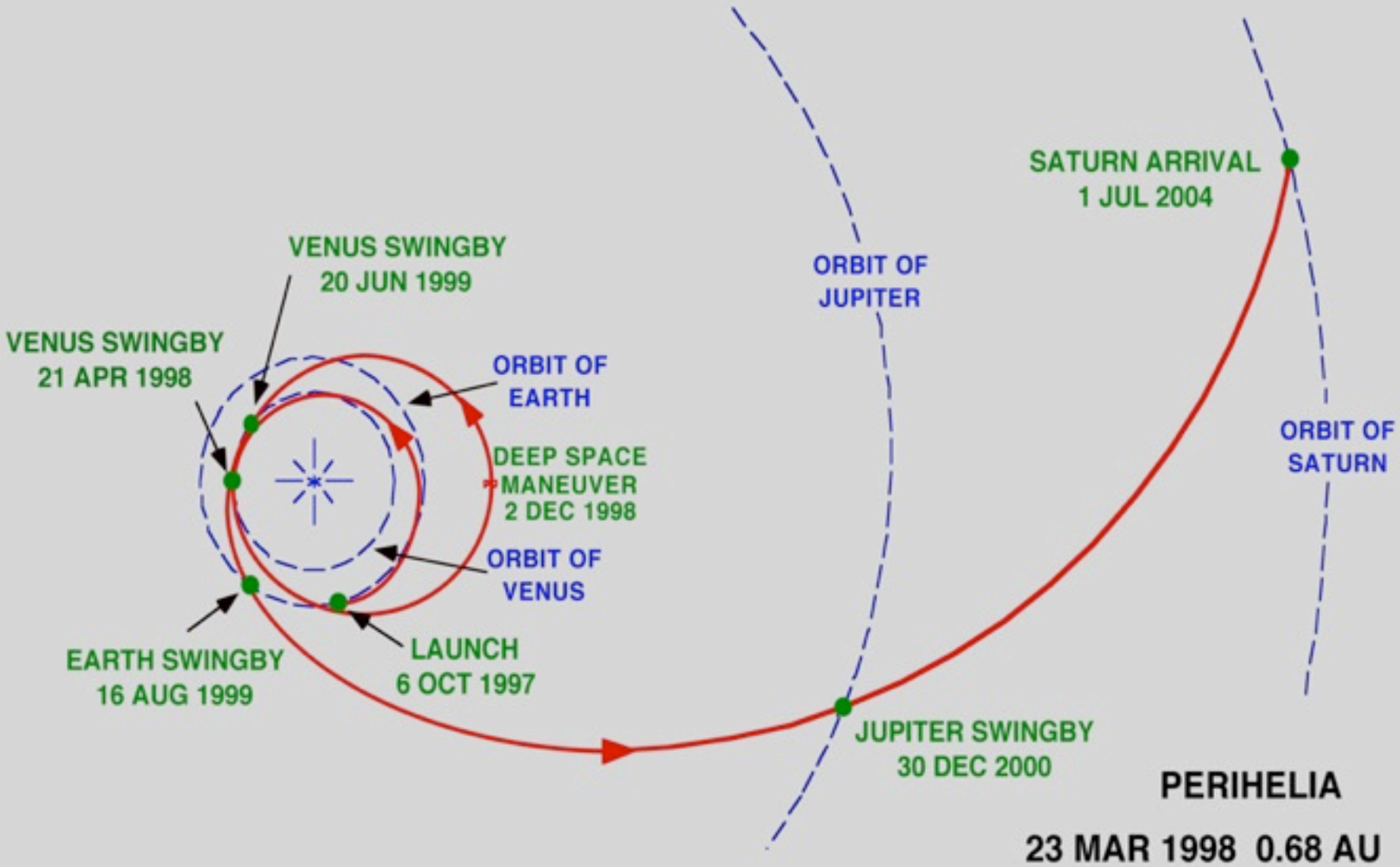
Opposizioni di Marte



Sonda Cassini, 1997-2005

CASSINI - VVEJGA OCT 1997

INTERPLANETARY TRAJECTORY



PERIHELIA

23 MAR 1998 0.68 AU
27 JUN 1999 0.72 AU

Cassini, 2006

La Terra (d=1,45 miliardi km, Sonda Cassini, 2013)

La Terra dal Voyager 1, d=6 miliardi di Km (1990)

La distanza delle stelle
W.Bessel, 1829

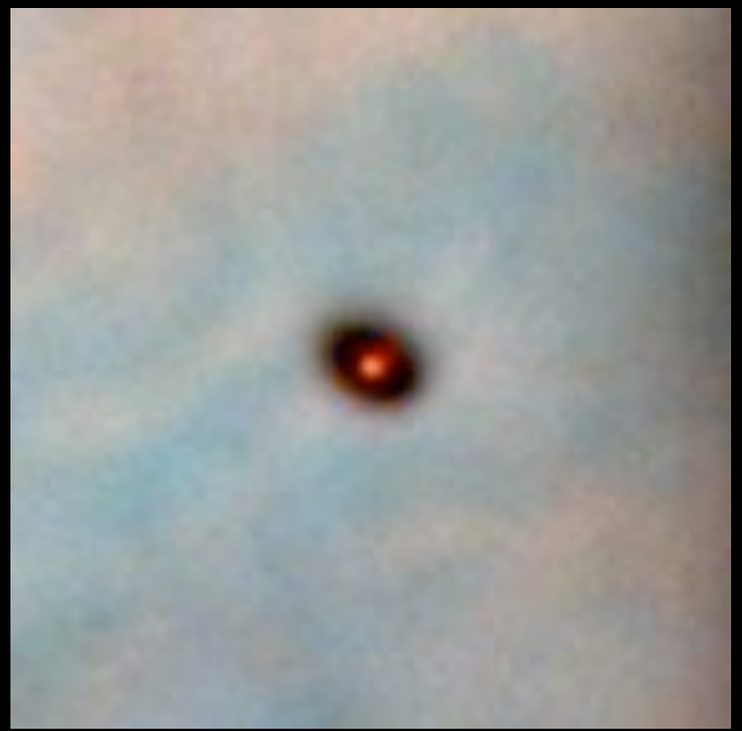
Orione

H II

Betelgeuse

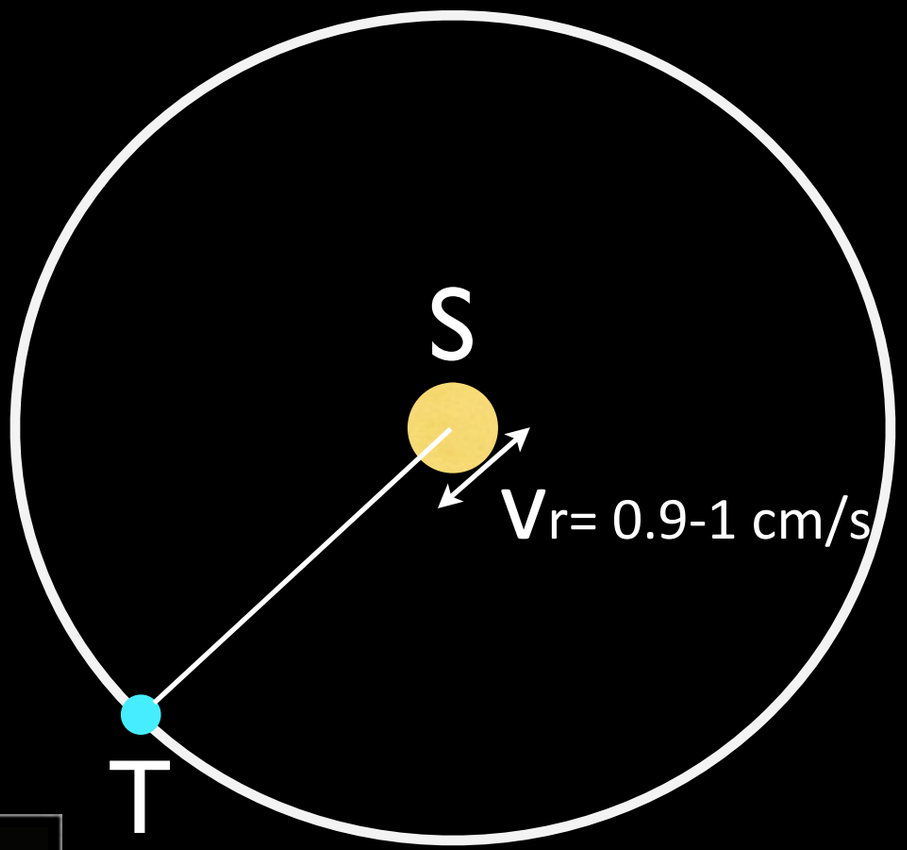
la stella e` nascosta dal disco nero,
ha diametro 450 volte quello del Sole

M 42 (Orione, d=1300 a.l., diam=40 a.l.)



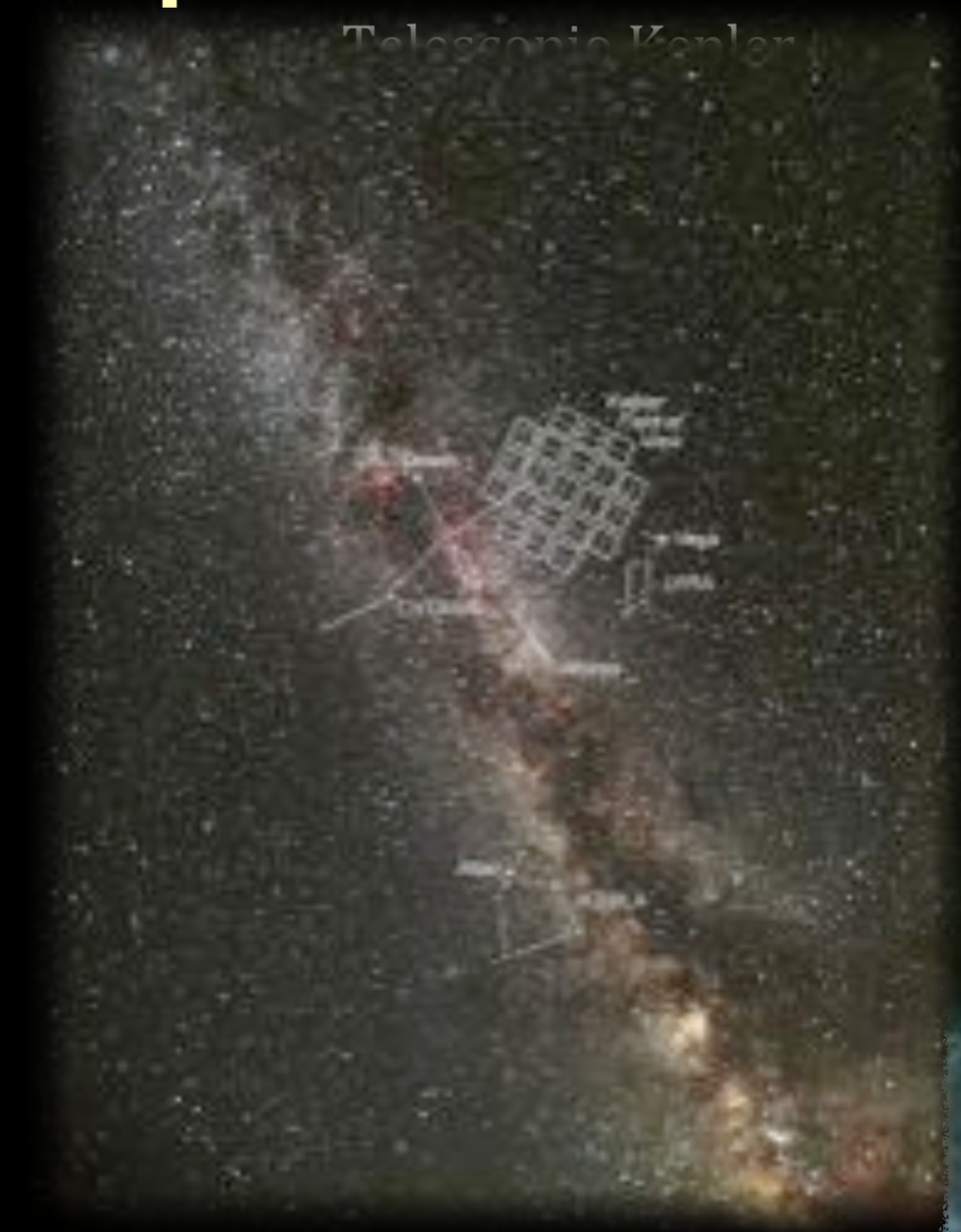
Hubble Space Telescope

dal 1990, h=600 km, specchio 2,5 metri

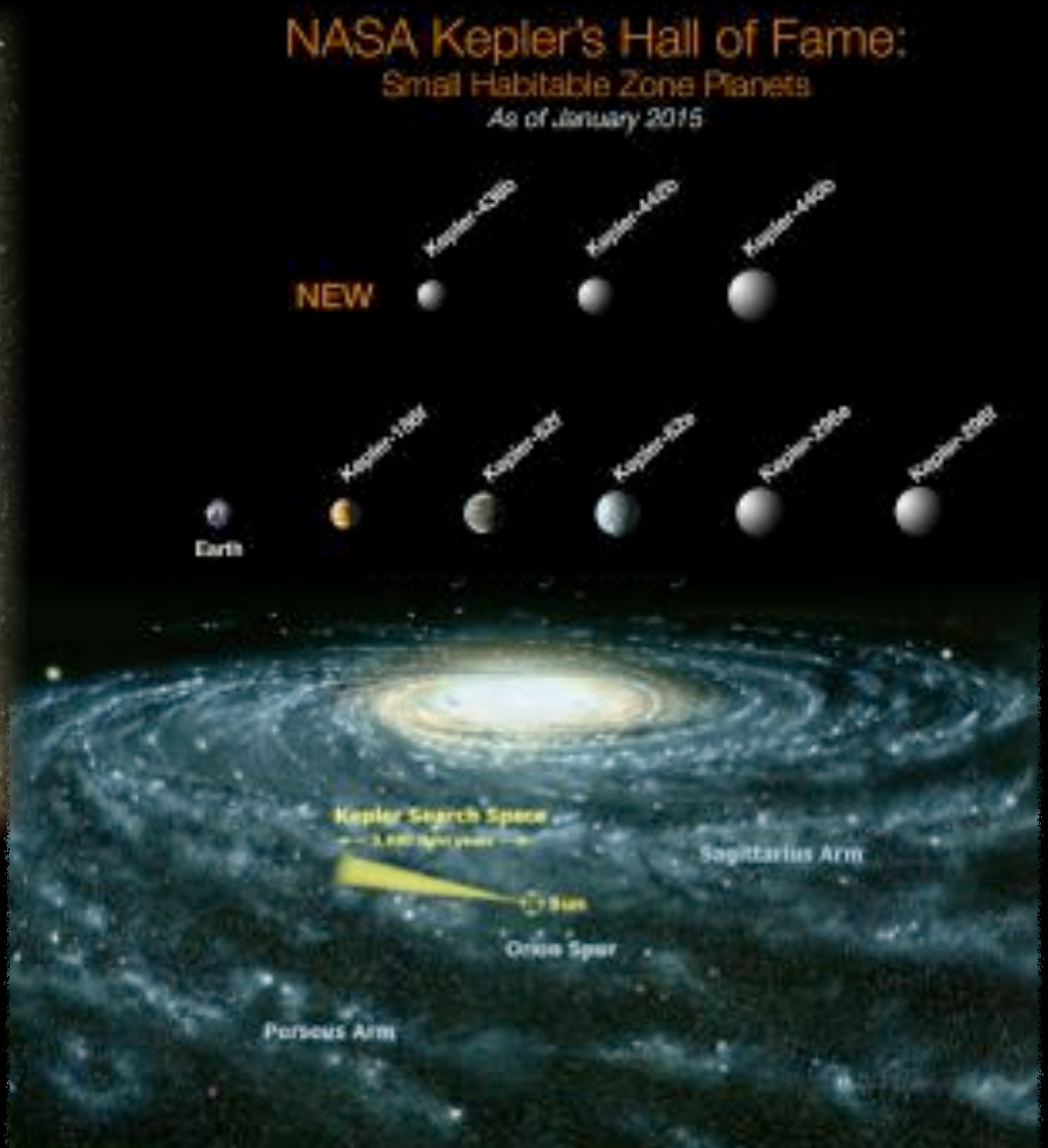


primo esopianeta
in Centauro, 172 a.l.
d=40 U.A., 3-10 M_{jup}

I pianeti extrasolari



Su 1000 confermati,
8 sono simili alla Terra per posizione e dimensione



Star HD 441479 e Rettangolo rosso

(Monoceros, d=2200 a.l. Proto-planetary Neb)

NGC 7000

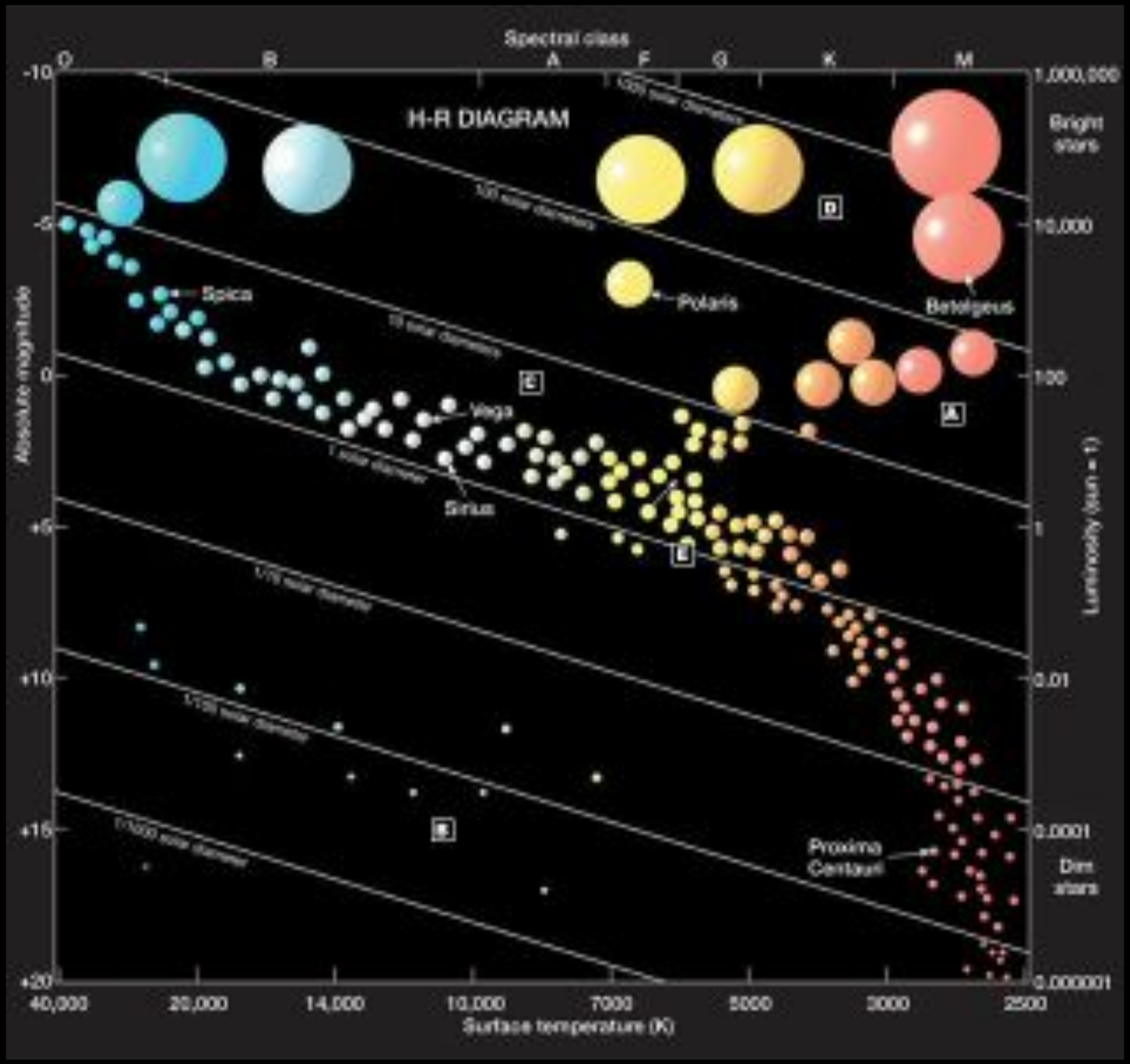
NGC 6334

Sco, d=5500 a.l.
diam=50 a.l.
VISTA, in IR, campo 60’

NGC 290

(nella Piccola Nube di Magellano, 200 mila a.l.)

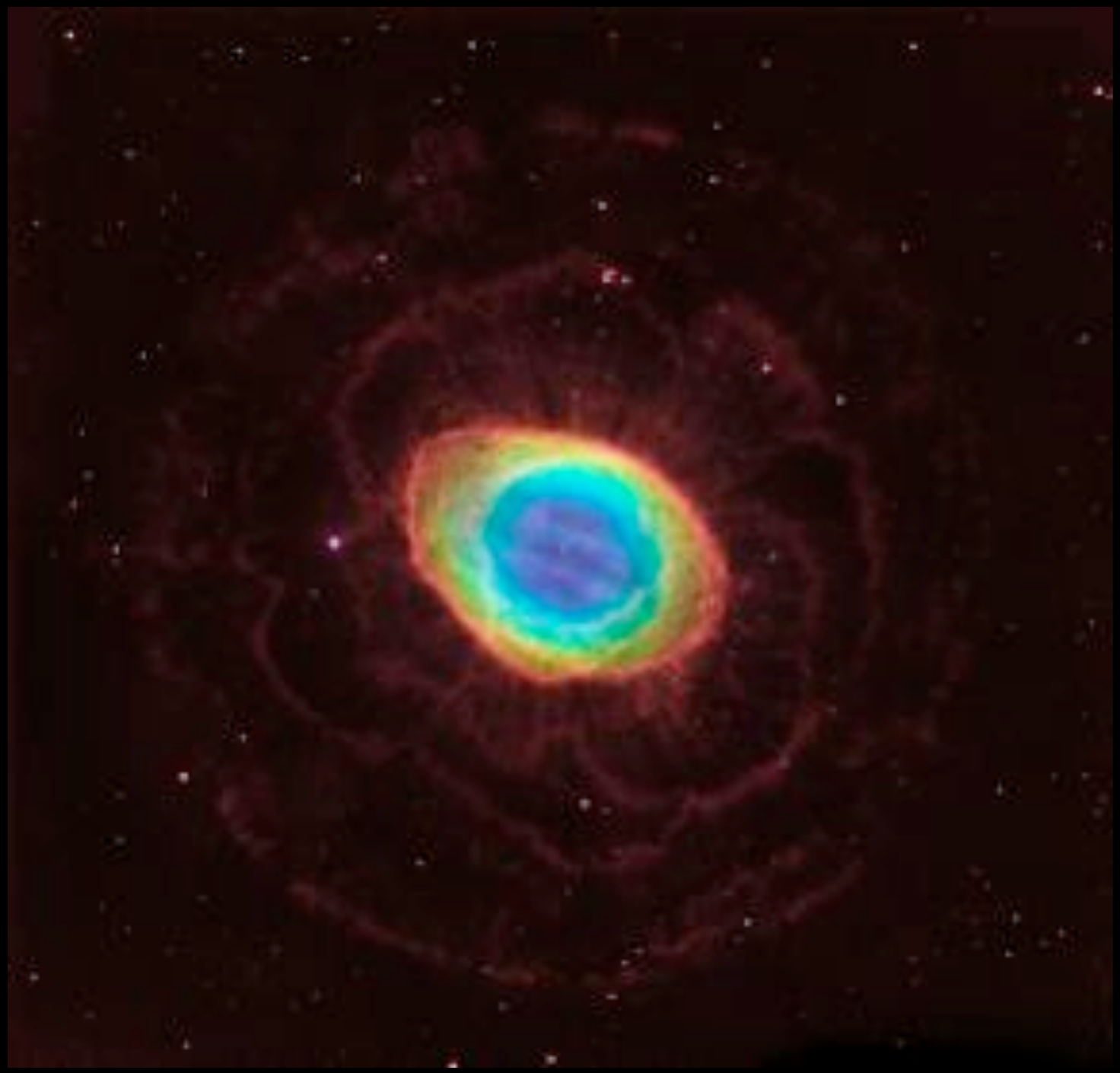

NGC884



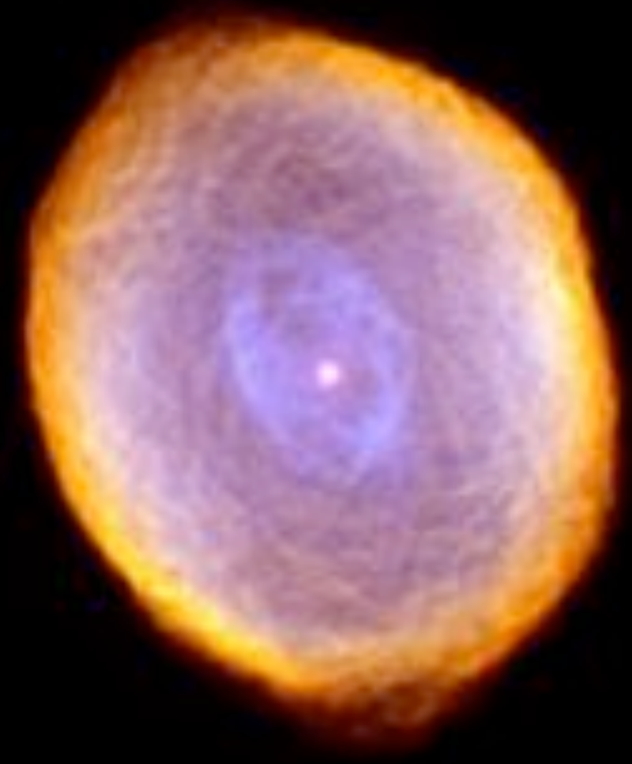
Il diagramma di Herzprung e Russell

Albireo

Mizar e Alcor



M 57 (Lyra, diam=1.3 a.l. - dist=2300 a.l.)



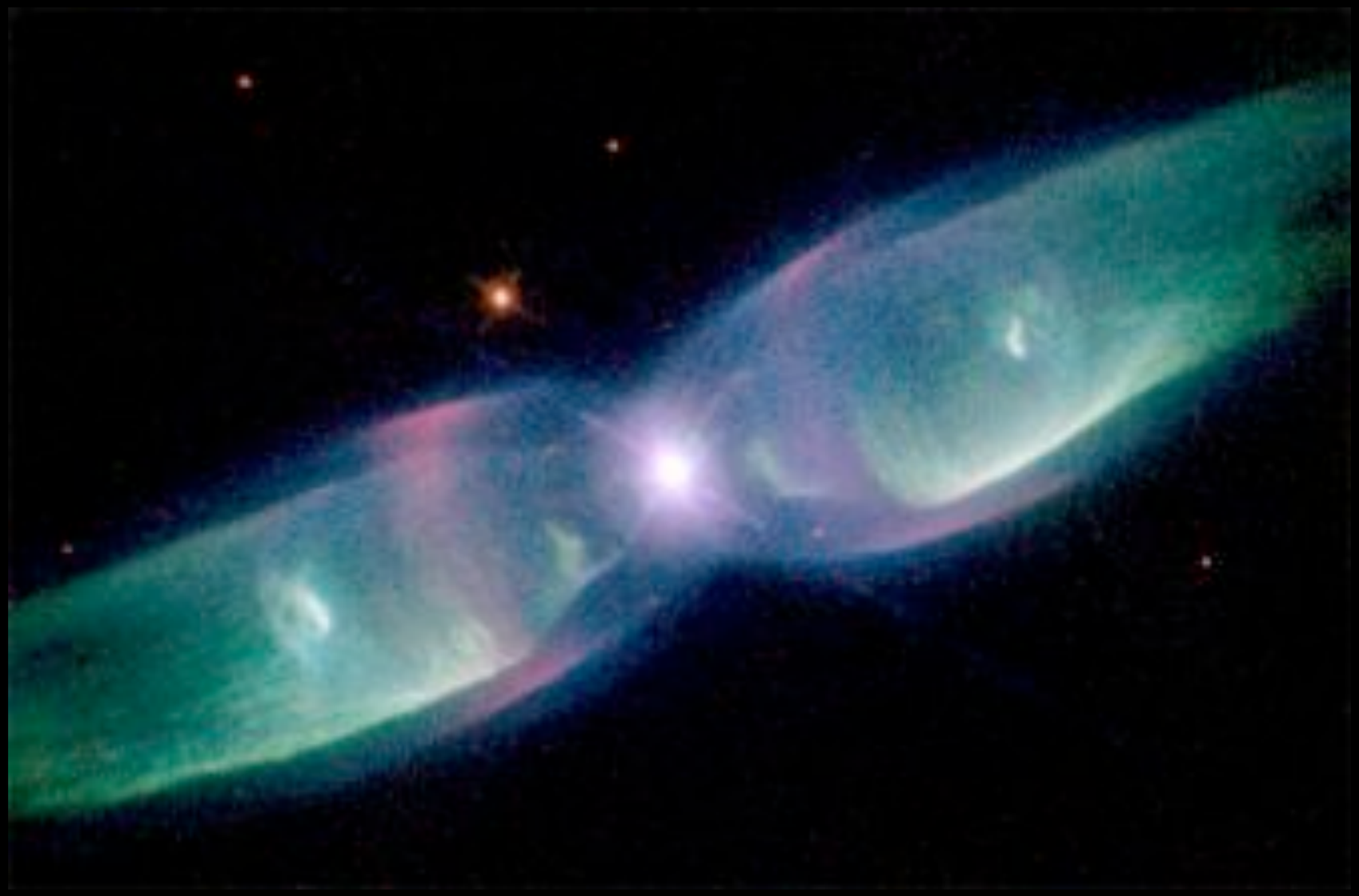
IC 418 Spirograph Neb. (Lepus, d=1100 a.l., diam=0.3 a.l.)

NGC 6543 Cat's Eye (Draco, d=3000 a.l.)
W. Herschel, W. Huggins (nebulium)

NGC 6302 (Scorpione, d=3800 a.l.)

SN 1987 A, in LMC, diam: 1a.l. (2007)

M 1 (1054 d.C. d=6500 a.l.)



M2-9 (d=2000 a.l., 1200 anni fa)

SNR0509 (type 1A)

in LMC, T=1600 a.C., diam = 23 a.l.

espansione 18M km/h

SN1006c, (1006 d.C. in Lupo, d=7200 a.l., max m=-7.5)


SNR 0519-69

Gum nebula, Vela

Le stelle Cefeidi sono pietre miliari nel cielo

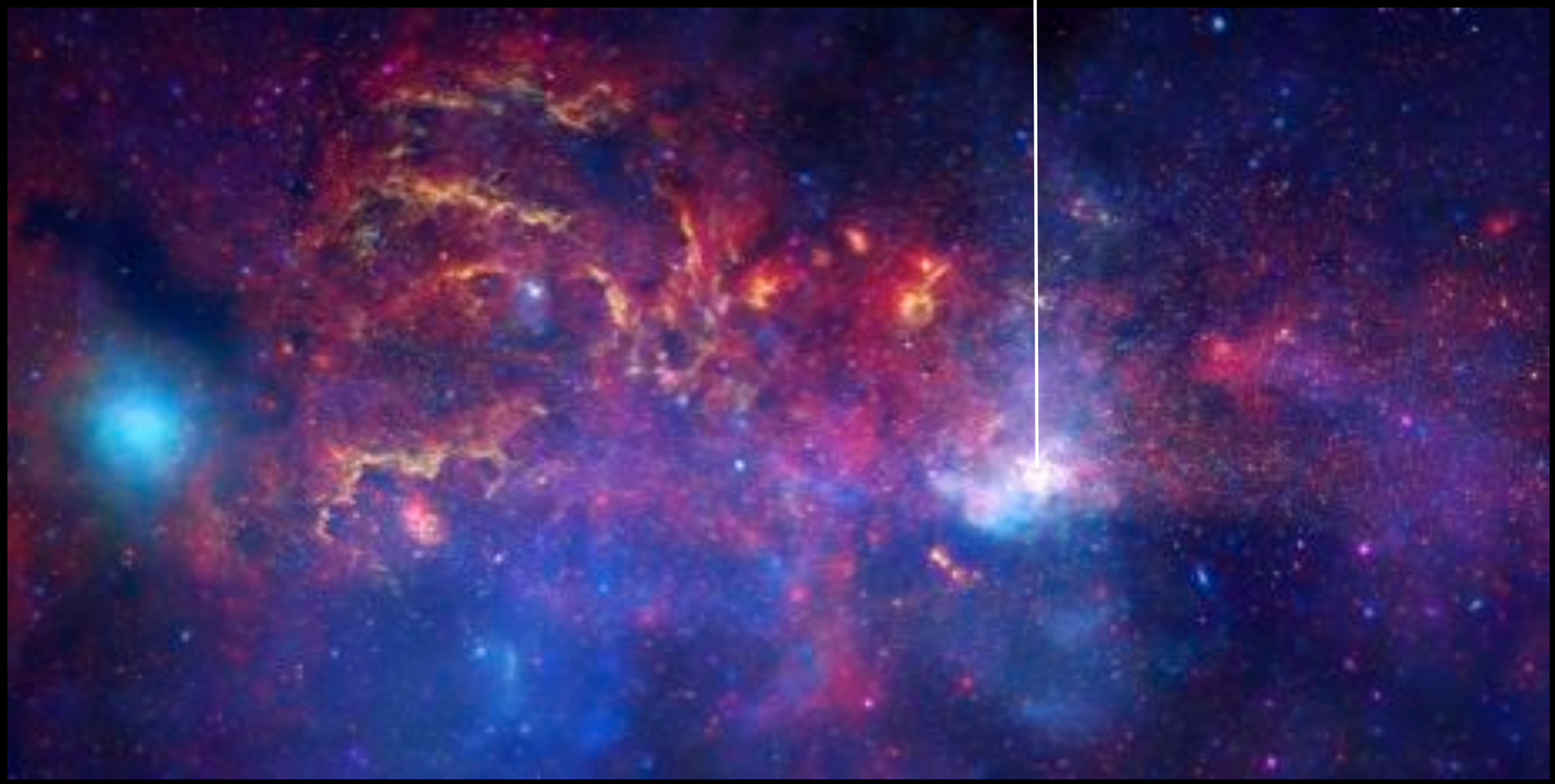
Ercole

M 80 (Scorpione, dist=32600 a.l. - diam=95 a.l.)

Shapley misuro' la Via Lattea
con le Cefeidi e gli ammassi globulari


Sagittarius
Galactic
WEEPS Center
Window
Scorpius
Corona
Australis
Photo: Akira Fujii

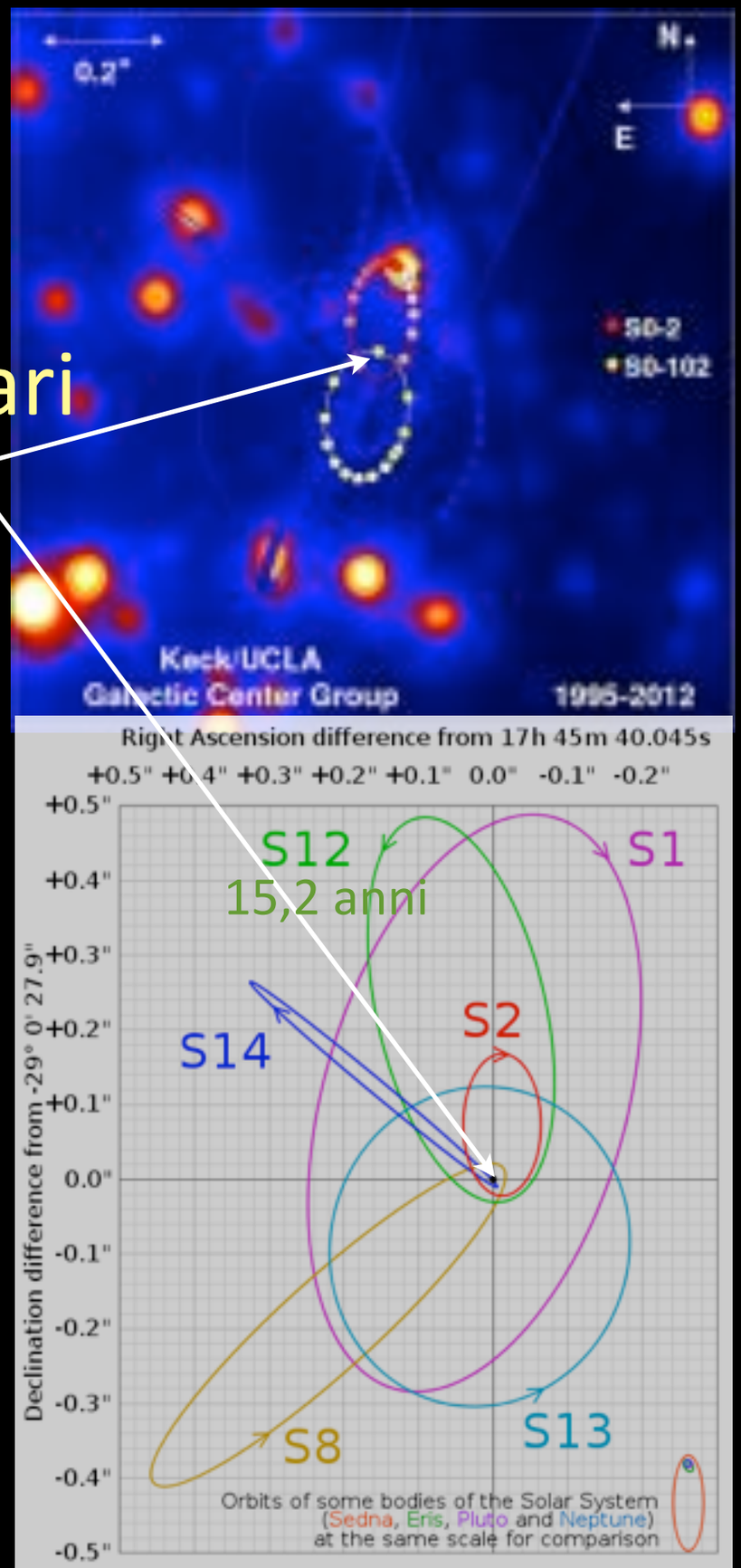
SagA



galactic center

Hubble (near IR) Spitzer (IR) Chandra (X)

4,1 milioni di masse solari
nel raggio di 4’’ luce



http://www.eso.org/public/news/eso0841/
https://www.youtube.com/watch?v=KCADH3x56eE

ISS - International Space Station

abitata dal 2000 da 2 a 6 persone
altezza 400 km -15,5 orbite/giorno