The Ages of Eta Ursae Majoris, HD 60532 and Alcyone

Jeffrey J. Wolynski
February 2, 2020
Rockledge, FL 32922
Jeffrey J. Wolynski

Abstract: The age of Eta Ursae Majoris is ~100,000 years old, not 10 million. The age of HD 60532 is ~5.5 million years, not ~2.7 billion. The age of Alcyone is ~70,000, not ~100 million. The latter ages are establishments' claims, the former are the claims made with interpretation of gyrochronological measurements inside the general theory of stellar metamorphosis. Calculations and a graph are provided to interpret the data. Paper is subject to revision.

Eta Ursae Majoris

BIG DIPPER!!

2/2/2020

JJW

$I = .3\left(6.1\left(1.989\times10^{30}\,kg\right)\right)\cdot\left(3.4\left(696{,}340\,km\right)\times10^{3}\right)^{2} m$

(6.1: multiplier; $1.989\times10^{30}\,kg$: Sun's mass; 3.4: multiplier; 696,340 km: Sun radii)

$= 3.63987\times10^{30}\,kg \cdot 5.605\times10^{18}\,m$

$= 20.4\times10^{48}\,kg\cdot m^2$

$I = 2.04\times10^{49}\,kg\cdot m^2$

150 km/s rotational velocity

$r = 2.367\times10^{9}\,m$

$2\pi r = 1.487\times10^{10}\,m$

$\frac{1.487\times10^{10}\,m}{150{,}000\,m/s} = 99{,}133$ seconds

$W = \frac{6.28\,rad}{99{,}133\,seconds} = \frac{1\,rad}{15{,}785} = \frac{1\,rad}{1.5785\times10^{4}}$

$\frac{1\,rad}{1.5785\times10^{4}\,sec}\ \frac{2.04\times10^{49}\,kg\cdot m^2}{1} =$

$\frac{2.04\times10^{49}\,kg\cdot m^2}{1.5785\times10^{4}\,sec} = \frac{2.04\times10^{45}\,kg\cdot m^2}{1.5785} = 1.292\times10^{45}\,kg\cdot m^2\cdot s^{-1} =$

subtract 31 zeros

1.292×10^{14}

Eta Ursae Majoris is ~100,000 years old

10 ± 8.6 My

NO!!

HD 60532 Total Axial Angular Momentum

2/2/2020

$$I = .3\left(1.44\left(1.989\times10^{30}\,kg\right)\right)\cdot\left(2.52\left(696{,}340\,km\right)\times10^{3}\right)^{2}m$$

multiplier · Sun's mass · Sun radii

$$= 8.59\times10^{29}\,kg \cdot 3.08\times10^{18}\,m$$

$$I = 2.646\times10^{48}\,kg\cdot m^{2}$$

$$W = \frac{6.28\ rad}{1.3775\times10^{8}\ seconds} =$$

$$= \frac{1}{4.559\times10^{8}}$$

$$= \frac{1\ rad}{2.19\times10^{7.5}\ seconds}$$

8 km/s rotational velocity

$r = 1.754\times10^{9}\,m$

$2\pi r = 1.102\times10^{10}\,m$

$\frac{2\pi r}{8\,km/sec} = 1.3775\times10^{8}$ seconds

↑ should be 8,000 not "8"

$\frac{1.102\times10^{10}\,m}{1.3775\times10^{8}} =$ km

$\frac{1.102\times10^{7}\,m}{8} = 1.3775\times10^{6}$ seconds!

$$\frac{1\ rad}{2.19\times10^{5}\ seconds}\cdot\frac{2.646\times10^{43}\,kg\cdot m^{2}}{1} =$$

$$\frac{1\ rad}{2.19\ sec}\cdot\frac{2.646\times10^{43}\,kg\cdot m^{2}}{1} = \frac{2.646\times10^{43}\,kg\cdot m^{2}}{2.19} = 1.208\times10^{43}\,kg\cdot m^{2}\cdot s^{-1}$$

Correct!

~5.5 million years old

2.7± .1 Billion years ~~yikes!~~

subtract 3 zeros

$1.208\times10^{10}\,kg\cdot m^{2}\cdot s^{-1}$

$1.208\times10^{12}\,kg\,m^{2}\cdot s^{-1}$

Alcyone Total Axial Angular Momentum 2/2/2020

Arbitrary moment of inertia factor

$I = .3\left(6\left(1.989\times10^{30}\,kg\right)\right)\cdot\left(9.3\left(696{,}340\,km\times10^{3}\right)^{2}m\right)$

(6: multiplier; $1.989\times10^{30}\,kg$: sun mass; 9.3: sun radii)

$I = .3\left(6\left(1.989\times10^{30}\,kg\right)\right)\cdot\left(9.3\left(696{,}340{,}000\,m\right)\right)^{2}m$

$I = 3.58\times10^{30}\,kg \cdot 4.194\times10^{19}\,m$

$= 15.01\times10^{49}\,kg\cdot m^{2}$

$I = 1.501\times10^{50}\,kg\cdot m^{2}$

$W = \frac{6.28\ rad}{273{,}084\ seconds} = \frac{1\ rad}{43{,}484\ sec} = \frac{1}{4.3484\times10^{4}\ sec}$

$\frac{1\ rad}{4.3484\times10^{4}\ sec}\cdot\frac{1.501\times10^{50}\,kg\cdot m^{2}}{1} = \frac{1.501\times10^{50}\,kg\cdot m^{2}}{4.3484\times10^{4}\ sec} =$

$\frac{1.501\times10^{46}\,kg\cdot m^{2}}{4.3484\ sec} =$

$.3452\times10^{46}\,kg\cdot m^{2}\cdot s^{-1} =$

$3.452\times10^{45}\,kg\cdot m^{2}\cdot s^{-1}$

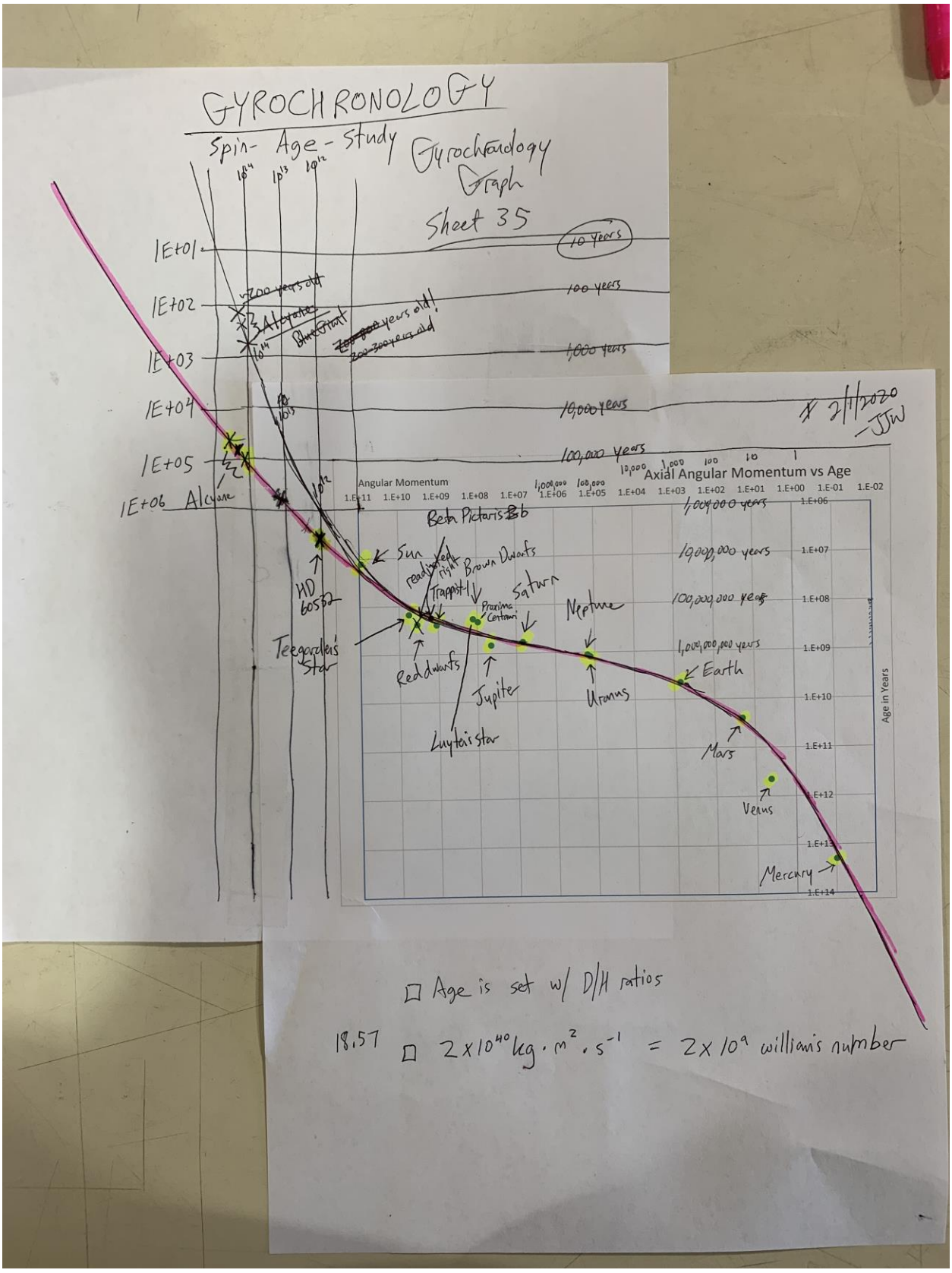
subtract 31 zeros!

$3.452\times10^{14}\,kg\cdot m^{2}\cdot s^{-1}$

Alcyone is ~ 70,000 years old

Pleiades ~~dt~~ star

100,000,000 years old? NOPE!


GYROCHRONOLOGY
Spin- Age- Study
Gyrochronology Graph
Sheet 35
1E+01
1E+02
1E+03
1E+04
1E+05
1E+06
10 years
100 years
1,000 years
10,000 years
100,000 years
1,000,000 years
10,000,000 years
100,000,000 years
1,000,000,000 years
Alcyone
Beta Pictoris
Sun
Brown Dwarfs
Trappist-1
Proxima Centauri
Saturn
Neptune
Earth
Jupiter
Uranus
Mars
Venus
Mercury
Teegarden's Star
Red dwarfs
Luyten's star
HD 60532
Angular Momentum
Axial Angular Momentum vs Age
Age in Years
Age is set w/ D/H ratios
2x10^40 kg·m^2·s^-1 = 2x10^9 williams number
18.57