Exo Solar Planets Backwards Orbits

How they defy modern theories of planetary formation

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Abstract
Several planets recently discovered have orbits that are in the opposite direction to the way the star spins on its axis. If the star is spinning clockwise the planet is orbiting anti-clockwise. This contradicts the modern nebula hypothesis and presents strong evidence for creationism.

Seven planets found so far orbiting backwards are: WASP 2b, WASP 5b, WASP 8b, WASP 15b, WASP 17b, WASP 33b, HAT-P-7b.

The Planets Physical Details

Planets	Planets Mass	Planets Mass	Planets Radius	Planets Radius
Name	Jupiter = 1	Kilograms	Jupiter = 1	Metres
WASP 2b	0.914	1.73532E+27	1.117	79,856,564
WASP 5b	1.637	3.10801E+27	1.171	83,717,132
WASP 8b	2.23	4.23388E+27	1.17	83,645,640
WASP 15b	0.542	1.02904E+27	1.428	102,090,576
WASP 17b	0.49	9.30314E+26	1.74	124,396,080
WASP 33b	1.11	2.10745E+27	1.56	111,527,520
HAT-P-7b	1.776	3.37191E+27	1.363	97,443,596

[Table 1]

The Parent Stars Physical Details

Stars	Stars Mass	Stars Mass	Stars Radius	Stars Radius
Name	Sun = 1	Kilograms	Sun = 1	Metres
WASP 2	0.86	1.71054E+30	0.81	562,950,000
WASP 5	1.03	2.04867E+30	1.04	722,800,000
WASP 8	1	1.989E+30	0.96	667,200,000
WASP 15	1.22	2.42658E+30	1.53	1,063,350,000
WASP 17	1.24	2.46636E+30	1.66	1,153,700,000
WASP 33	1.5	2.9835E+30	1.44	1,000,800,000
HAT-P-7	1.47	2.92383E+30	1.84	1,278,800,000

[Table 2]

Planets Orbital Properties

Planets	Orbital Radius	Orbital Radius	Circumference	Orbital Period	Orbital Velocity
Name	AU	Metres	Metres	Seconds	Metres/Second
WASP 2b	0.03138	4,694,448,000	29,507,958,857	185,952	158,686
WASP 5b	0.02729	4,082,584,000	25,661,956,571	140,696	182,393
WASP 8b	0.0793	11,863,280,000	74,569,188,571	705,024	105,768
WASP 15b	0.0499	7,465,040,000	46,923,108,571	324,178	144,745
WASP 17b	0.051	7,629,600,000	47,957,485,714	322,742	148,594
WASP 33b	0.02555	3,822,280,000	24,025,760,000	105,397	227,956
HAT-P-7b	0.0377	5,639,920,000	35,450,925,714	190,489	186,105

[Table 3]

Evolutionists claim that theses planets originally had forward orbits with a much greater radius that what they have now. What are the ratios between the current orbital values and the initial orbital values with an original orbital radius of 1,000 million kilometres? Table 4 shows the answer.

Current Versus Initial Orbital Properties

Planets Name	Final Orbital Velocity [m/s]	Initial Orbital Velocity [m/s]	Centripetal Force Ratio	Kinetic Energy Ratio
WASP 2b	128,693	10,679	1,235,505,661	6,589,981
WASP 5b	139,739	11,687	1,755,836,810	8,577,567
WASP 8b	96,574	11,520	39,616,390	499,353
WASP 15b	118,503	12,705	181,085,122	1,561,032
WASP 17b	116,446	12,807	159,645,788	1,420,266
WASP 33b	155,640	14,091	1,694,023,644	8,350,075
HAT-P-7b	186,105	13,953	1,694,023,644	8,350,075

[Table 4]

Astronomy Details, Internet URL

Systems Name	Stars Details	Planets Details
WASP 2	http://en.wikipedia.org/wiki/WASP-2	http://en.wikipedia.org/wiki/WASP-2b
WASP 5	http://en.wikipedia.org/wiki/WASP-5	http://en.wikipedia.org/wiki/WASP-5b
WASP 8	http://en.wikipedia.org/wiki/WASP-8	http://en.wikipedia.org/wiki/WASP-8b
WASP 15	http://en.wikipedia.org/wiki/WASP-15	http://en.wikipedia.org/wiki/WASP-15b
WASP 17	http://en.wikipedia.org/wiki/WASP-17	http://en.wikipedia.org/wiki/WASP-17b
WASP 33	http://en.wikipedia.org/wiki/WASP-33	http://en.wikipedia.org/wiki/WASP-33b
HAT-P-7	http://en.wikipedia.org/wiki/HAT-P-7	http://en.wikipedia.org/wiki/HAT-P-7b

[Table 5]

What is the terminal velocity of a free fall from the original hypothetical orbital radius to the current one?
Terminal velocity formula:

$$\mathrm{v} = \sqrt{\frac{2GM}{Y} + \frac{2GM}{X}}$$

[1]

G = Gravitational constant = 6.673 x 10-11
M = Mass of the primary, kilograms
X = Starting orbital radius, metres.
Y = Final orbital radius, metres
v= Final velocity, meters per seconds

A major problem is that even if the free fall velocity were converted to orbital velocity it would not be the right speed.

$$\mathrm{Y} = \frac{2GM}{\mathrm{v}^2 + (2GM \div X)}$$

[2]

Below is the planet's actual orbital velocity and the only orbital radius that orbital speed can work on. With free fall the falling planet would reach that speed at twice the actual orbital radius.

Planets	Orbital Velocity	Orbital Radius	Twice Radius
Name	Meters/Second	Meters	Meters
WASP 2b	158,686	4,694,448,000	8,984,370,081
WASP 5b	182,393	4,082,584,000	8,151,771,861
WASP 8b	105,768	11,863,280,000	23,178,875,469
WASP 15b	144,745	7,465,040,000	15,222,179,948
WASP 17b	148,594	7,629,600,000	14,688,538,177
WASP 33b	227,956	3,822,280,000	7,604,312,843
HAT-P-7b	186,105	5,639,920,000	11,140,932,832

Evolutionist astronomers suppose that these planets originally orbited much further from the parent star. They fell out of orbit towards the star. This free fall direction must have suddenly been changed with a right angle turn to an orbital direction. Let us assume the original orbital radius was 1,000 million kilometres.

Turning Force And Time

Planets	Terminal Velocity	Turning Force	Turning Force	Turning Time
Name	Metres/Second	Newtons Per Second	Total Newtons	Seconds
WASP 2b	220,000	8.39895E+28	2.99962E+32	3,571
WASP 5b	258,257	2.07294E+29	6.30666E+32	3,042
WASP 8b	148,685	9.35994E+28	4.94618E+32	5,284
WASP 15b	207,500	4.43066E+28	1.6777E+32	3,787
WASP 17b	206,908	3.98276E+28	1.51242E+32	3,797
WASP 33b	322,138	2.18696E+29	5.33413E+32	2,439
HAT-P-7b	262,289	2.31972E+29	6.94897E+32	2,996

[Table 6]

If we assume that the planet does a turn with a million kilometres radius, Table 6 shows us how much centripetal force is needed per second and total time to achieve a right angle turn.

Total force needed to do a right angle turn with a million kilometre turning radius is thus:

$$F = \frac{mv^2}{\mathrm{R}} \times \frac{\pi R}{2v}$$

[3]

m = planets mass, kilograms
R = turning radius, metres
v = planets velocity, metres/second
F= force, Newtons

Planet two mass

M = Second planets mass, kilograms,
m = Known planets mass, kilograms
r = Turning radius, metres
F= Centripetal Force, Newtons
G= Gravitational Constant, = 6.673 x 10^{-11}

$$M = \frac{Fr^2}{Gm}$$

[4]

Planets	Second Planets Mass	Turning Power Needed	Solar Power Needed
Name	Kilograms	Joules	Sun = 100%
WASP 2b	7.25E+29	1.47821E+26	38.44%
WASP 5b	1E+30	4.28281E+26	111.36%
WASP 8b	3.31E+29	1.11335E+26	28.95%
WASP 15b	6.45E+29	7.3549E+25	19.12%
WASP 17b	6.42E+29	6.59252E+25	17.14%
WASP 33b	1.56E+30	5.63603E+26	146.54%
HAT-P-7b	1.03E+30	4.8675E+26	126.56%

[Table 7]

Centripetal Force Of An Orbiting Sphere

$$\boldsymbol{F = \frac{Mv^2}{r}}$$

[5]
F = Force, Newtons
M = Mass of orbiting sphere, kilograms
v = Orbital velocity, metres/second
r = Metres between the centre of both objects

The gravitational force of the Planet Two must equal or be greater that the centripetal force to accomplish the turn in the required distance.

Kinetic energy of an orbiting sphere

$$E = \frac{1}{2}mv^2$$

[6]
E = Joules
m = mass in kilograms
v = velocity in metres per second

Amount Of Explosives Needed

How much power is needed to cause the free falling planet to do a right hand turn with a turning radius of 1,000,000 kilometres? What is the amount of TNT needed. The density of TNT = 1,654 kilograms per cubic metre. The energy of one metric tonne = 4,184,000,000 Joules. The radius of a hypothetical TNT explosive sphere needed to change the known planets orbital vector is given below:

Power needed per second for the turn to happen

$$P = T \times 2\pi \times \frac{1}{t}$$

[7]
P = Power, Joules
T = Torque, Centripetal force, Newtons
t = Turning time, seconds

$$M = \frac{P}{4{,}600{,}000}$$

[8]
M = Mass of TNT needed, kilograms

If the volume is known the radius can be calculated:

$$R = \sqrt[3]{\frac{V}{4\pi \div 3}}$$

[9]
Where V= volume and R= radius.

The volume of the TNT planet is thus:

$$V = \frac{M}{p}$$

[10]
v = TNT Sphere's volume, cubic metres
M = Objects current mass, kilograms
p = TNT density, 1,654 kilograms per cubic metre.

The radius of the original sphere needed is thus:

$$r = \sqrt[3]{\frac{M \div p}{4\pi \div 3}}$$

[11]

Kilograms Of Explosives Needed

Planets Name	Kilograms TNT Needed	Kilograms Uranium
WASP 2b	1.60676E+19	43,055,976
WASP 5b	4.65523E+19	124,745,399
WASP 8b	1.21016E+19	32,428,424
WASP 15b	7.99445E+18	21,422,610
WASP 17b	7.16578E+18	19,202,034
WASP 33b	6.12612E+19	164,160,617
HAT-P-7b	5.29076E+19	141,775,775

[Table 8]

If we are using Uranium as a nuclear explosive we divide the power needed by the atomic power of one kilo or litre converted into pure energy. The Velocity of light is 299,792,458 metres per second. The Density of Uranium is 19.1 kilograms per litre. One litre of Uranium = 1.72 x 10^{18} Watts of energy. One kilogram equals 9 x 10^{16} Watts of energy.

$$M = \frac{P}{1.72 \times 10^{18}}$$

[12]

$$E = mc^2$$

[13]

Power needed per second for the turn to happen

$$P = T \times 2\pi \times \frac{1}{t}$$

[14]

Turning time in seconds:

$$t = \frac{\pi R}{2v}$$

[15]

Reverse Acceleration

Because the planet is falling to fast when it reaches its current orbital radius, you would need another planet to slow down the falling planets speed to orbital speed. The amount of kinetic energy that must be eliminated to have a stable orbit is determined by the formula below:

$$E = (\frac{1}{2}mV^2) - (\frac{1}{2}mv^2)$$

[16]

E = Energy, Joules.
m = mass, kilograms
V= Free fall velocity, metres/second.
v = Orbital velocity, metres/second.

The orbit can only be stable if the orbital time in seconds [T] fulfils the formula below.

Orbital Time

T=Seconds
G=6.673 x 10^{-11}
M= Star's mass, kilograms
m= Planet's mass, kilograms
R= Orbital radius, metres

$$T = \sqrt{\frac{4\pi^2 R^3}{G(M+m)}}$$

[17]

$$V = \sqrt{\frac{4\pi^2 R^3}{G(M+m)}} \div 2\pi R$$

[18]

In table 9 we can see how much extra kinetic energy must be eliminated to put the planet in a stable orbit. Some of them would require the same amount of energy to be removed as the Sun's energy output in almost 5,000 years.

Planets	Energy Difference	Solar Years
Name	Joules	Energy Output
WASP 2b	2.01E+37	1,660
WASP 5b	5.19E+37	4,280
WASP 8b	2.31E+37	1,905
WASP 15b	1.14E+37	937
WASP 17b	9.64E+36	795
WASP 33b	5.46E+37	4,498
HAT-P-7b	5.76E+37	4,745

[Table 9]

The specific heat of Hydrogen is 14.3 Joules/Gram/Degree Kelvin.

P = Pressure in Pascals, Kilograms/Square metre.
V= Volume, cubic metres.
N = Number of Moles, 6.022×10^{23}. One Mole per 2.01588 grams of Hydrogen molecules.
R = 8.314472.
T= Temperature, degrees Kelvin

$$pV = nRT$$

[19]

$$p = \frac{nRT}{V}$$

[20]

$$V = \frac{nRT}{p}$$

[21]

$$T = \frac{E}{M \div C}$$

[22]

The temperature increase [T, Kelvin] is the energy given off [E, Joules] divided by the mass [grams] divided by the specific heat of the Hydrogen molecule [14.3 Joules/Gram/Degree Kelvin]. This increase is defined in formula 21.

Hydrostatic Equilibrium And G Force Values

Planets	Density	Gas Pressure	Surface Gravity	Pressure/Density
Name	Kilos/Cubic Metre	Pascals	Newtons	Newtons
WASP 2b	813.18	14,766	18.16	18.16
WASP 5b	1264.08	37,407	29.59	29.59
WASP 8b	1726.42	69,714	40.38	40.38
WASP 15b	230.79	1,521	6.59	6.59
WASP 17b	115.33	463	4.01	4.01
WASP 33b	362.53	4,099	11.31	11.31
HAT-P-7b	869.67	20,608	23.7	23.7

[Table 10]

P = Gas pressure, Pascals.
G = Gravity constant, 6.673×10^{-11}
M = Planets mass, kilograms.
P = Density, kilograms per cubic metre.

$$P = \frac{GMp}{R^2}$$

[23]
Outward force = Gas pressure divided by density.

$$F = \frac{GM}{R^2}$$

F = surface gravity

[24]

Hydrostatic Equilibrium Forces In Newtons

Planets	Gravity	Gas Pressure	Difference
Name	Down Force	Up Force	Ratio
WASP 2b	18.16	1,660,514,636,195	91,445,691,963
WASP 5b	29.59	2,390,766,098,114	80,790,861,646
WASP 8b	40.38	780,980,281,558	19,340,469,656
WASP 15b	6.59	1,580,855,543,278	239,944,120,831
WASP 17b	4.01	1,482,598,600,210	369,561,136,730
WASP 33b	11.31	3,705,219,407,458	327,717,486,873
HAT-P-7b	23.7	2,442,935,846,527	103,091,193,632

[Table 11]

The Tolman-Oppenheimer-Volkoff Equation

http://en.wikipedia.org/wiki/Tolman–Oppenheimer–Volkoff_equation

$$\frac{dP(r)}{dr} = -[\frac{G}{r^2}]\times[p(r) + \frac{P(r)}{c^2}]\times[M(r) + 4\pi r^3 \frac{P(r)}{c^2}]\times[1 - \frac{2GM(r)}{rc^2}]^{-1}$$

c = Speed of light, 299,792,458
[25]

$$V = \sqrt{\frac{3RT}{m}}$$

V = Molecules velocity, metres/second
R = Gas constant
T = Temperature, Kelvin
m = molar weight, grams

[26]

Molecules/planets escape velocity, metres/second

$$V = \sqrt{\frac{2GM}{r}}$$

[27]

Planets Name	Final Temp Kelvin	Molecule Speed Metres/Second	Escape Velocity Metres/Second	Velocity Ratios
WASP 2b	402,600	70,580	53,853	1.31
WASP 5b	579,649	84,689	70,390	1.2
WASP 8b	189,353	48,404	82,191	0.59
WASP 15b	383,289	68,867	36,677	1.88
WASP 17b	359,459	66,691	31,593	2.11
WASP 33b	898,338	105,430	50,218	2.1
HAT-P-7b	592,304	85,609	67,957	1.26

[Table 12]

The gas molecules speed would exceed the escape velocity of the planet's gravity and explode the planet.

The formula below gives the time for a decaying spiral free fall. How long would it take for the planets to fall from their current orbit to the stars surface if the orbit were gradually reversed? Table 13 gives the answer. If you started slowing down the orbital velocity of the planet it would free fall into the star.

$$T_{ff} = \frac{\pi}{2} \times \frac{R^{1.5}}{\sqrt{2 \times G(M+m)}}$$

Planets Name	Free Fall Time Seconds	Free Fall Time Hours
WASP 2b	27,605	7.67
WASP 5b	18,494	5.14
WASP 8b	114,140	31.71
WASP 15b	44,717	12.42
WASP 17b	45,129	12.54
WASP 33b	11,798	3.28
HAT-P-7b	22,898	6.36

[Table 13]

Conclusion

The current evolutionary theories on the origin of Solar Systems cannot explain these retrograde orbits. You need a second star/mega planet almost as big as the Sun to turn the free falling planet at right angles to an orbital trajectory. No such object exists. The Bible creation account in the book of Genesis offers the best explanation.