

## The Pioneer Anomaly B

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See the Unified Absolute Relativity Theory at:

[www.wbabin.net/saraiva/saraiva305.pdf](http://www.wbabin.net/saraiva/saraiva305.pdf)  
[www.wbabin.net/saraiva/saraiva306.pdf](http://www.wbabin.net/saraiva/saraiva306.pdf)  
[www.wbabin.net/saraiva/saraiva307.pdf](http://www.wbabin.net/saraiva/saraiva307.pdf)

The Pioneer anomaly is a systematic error due to the wrong Stefan-Boltzmann law.

Total possible error:

$$\Delta g = (8 \pm 3) \times 10^{-10} m/s^2$$

Observed acceleration:

$$\Delta g = 8.74 \times 10^{-10} m/s^2$$

Value of the wrong acceleration due to sun's radiation:

$$\Delta g = 5 \times 10^{-10} m/s^2$$

Wrong and correct irradiance or intensity:

$$I_{WR} = \sigma T^4 ; \quad I_{OK} = \frac{T}{t}$$

Pressure:

$$P = \frac{I}{c}$$

Acceleration:

$$F = PA \quad \text{and} \quad A = 6m^2$$

$$\Delta g = 6 \frac{P_{WR} - P_{OK}}{259}$$

T – temperature; t – time; c – light speed; F – force

The correct pressure is lower than the wrong pressure, so it appears an acceleration towards the sun.

Correct calculations:

$$D = 45AU = 6.75 \times 10^{12} m$$

$$I = \frac{3.845 \times 10^{26}}{4\pi D^2} = 0.67W / m^2$$

$$T = I = 0.67K$$

$$P = I/c \quad \text{and} \quad F = 6P$$

$$g = \frac{F}{259} = 5.2 \times 10^{-11} m/s^2$$

$$5.2 \times 10^{-11} < 5 \times 10^{-10}$$

Wrong calculations and temperature:

$$5 \times 10^{-10} = \frac{F}{259}$$

$$P = F/6 = 2.16 \times 10^{-8}$$

$$I = Pc = 6.47W / m^2$$

$$I = \sigma T^4 \quad \Leftrightarrow \quad T = 103.4K$$

This is the wrong temperature for a distance:

$$\frac{3.845 \times 10^{26}}{4\pi .D^2} = \sigma T^4 \quad \Leftrightarrow \quad D = 14.5AU$$

### Proton Cooper pair

True mass of the proton:

$$m = 1.6728 \times 10^{-27} kg \quad ; \quad E = mc^2 = 938.3721MeV$$

Proton Compton frequency:

$$f = \frac{-h + \sqrt{h^2 + 4m^2c^2S}}{2mS} = 2.2687 \times 10^{23} \text{ Hz}$$

Proton wave speed:

$$w = \sqrt{c^2 - Sf^2} = 2.99776 \times 10^8 \text{ m/s}$$

Proton Compton wavelength:

$$x = \frac{w}{f} = 1.32 \times 10^{-15} \text{ m}$$

Proton Cooper pair distance:

$$R = \frac{N^2 x}{\pi}$$

Cooper pair force:

$$F = mg \quad \text{and} \quad g = \frac{Sf^3}{w} = 7.4537 \times 10^{27} \text{ m/s}^2$$

$$F = 12.47 \text{ N} = \frac{q^2}{4\pi \epsilon_0 R^2} \quad \Leftrightarrow \quad N = 3.2$$

$$\Leftrightarrow \quad R = 4.3 \times 10^{-15} \text{ m}$$

The deuterium is a Cooper pair between a proton and a neutron.

Theoretical electric dipole moment of the Cooper pair:

$$\Delta m = \frac{qk_B}{R} = 5.142 \times 10^{-28} \text{ kg}$$

But we don't observe this extra mass so, the protons and neutrons don't generate mass.

Only electrons, positrons and neutrinos electric dipole moments generate mass.

We must have electrons and neutrinos inside the proton and the neutron.