

MKI - apríl

III.U1

i, j, k jsou prvky
kvaternionů/bázové
vektory

$$a=i$$

$$b=j$$

$$ij=-ji$$

$$k=-(-k)$$

$$ij=-ji$$

$$k=-(-k)$$

$$k=k$$

Super!

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III.U2 - C

$$S = \sum_{n=1}^{\infty} n = 1+2+3+4+5+\dots$$

$$T = 1-1+1-1+1-1\dots$$

$$U = 1-2+3-4+5-6\dots$$

$$S-U = 4+8+12=4(1+2+3+4+\dots)$$

$$T = 1-1+1-1+1-1\dots \quad | \cdot 2$$

$$2T = 1-1+1-1+1-1\dots$$

$$+0+1-1+1-1+1\dots$$

$$2T = 1+0+0+0+0+0$$

$$2T = 1 \quad T = \frac{1}{2}$$

$$U = 1-2+3-4+5-6\dots \quad | \cdot 2$$

$$2U = 1-2+3-4+5-6\dots$$

$$+0+1-2+3-4+5\dots$$

$$2U = 1-1+1-1+1-1=T$$

$$2U = \frac{1}{2} \quad U = \frac{1}{4}$$

$$S = 1+2+3+4+5+\dots$$

$$S-U = 1+2+3+4+5+\dots$$

$$-(1-2+3-4+5\dots)$$

$$S-U = 0+4+0+8+0+12\dots$$

$$S-U = 4+8+12=4(1+2+3+4+\dots)$$

$$S-U = 4S \quad | -S$$

$$3S = -U = -\frac{1}{4}$$

$$S = -\frac{1}{12}$$

Hezky :)

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III.U3

Nikola Tesla	zoof lie	William Rowan Hamilton	alkoholismus
Paul Dirac	Aspergerův syndrom	Isaac Newton	celoživotní panictví
Albert Einstein	vegetariánství	Alan Turing	homosexualita
Erwin Schrödinger	pedof lie	Emmy Noether	ženská identita
Berhard Riemann	Extrémní stydlivost		

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III.A - Liou Cch'-Sin

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III.K - Anihilace elektronu a pozitronu

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III.B

2. - screenshot z https://en.wikipedia.org/wiki/Majorana_equation

Proof

This form is not entirely obvious, and so deserves a proof. Starting with

$$-i \not{\partial} \psi + m \psi_c = 0$$

Expand $\psi_c = C \bar{\psi}^T$:

$$-i \not{\partial} \psi + m C \bar{\psi}^T = 0$$

Multiply by C use $C^2 = -1$:

$$-i C \not{\partial} C^{-1} C \psi - m \bar{\psi}^T = 0$$

Charge conjugation transposes the gamma matrices:

$$+i \not{\partial}^T C \psi - m (\gamma^0)^T \bar{\psi}^* = 0$$

Take the complex conjugate:

$$-i \not{\partial}^{\dagger} C^* \bar{\psi}^* - m (\gamma^0)^{\dagger} \psi = 0$$

The matrix γ^0 is Hermitian, $(\gamma^0)^{\dagger} = \gamma^0$ in all three representations (Dirac, chiral, Majorana):

$$-i \not{\partial}^{\dagger} C^* \bar{\psi}^* - m \gamma^0 \psi = 0$$

It is also an involution, taking the Hermitian conjugate: $\gamma^0 \gamma^{\mu} \gamma^0 = (\gamma^{\mu})^{\dagger}$

$$-i \not{\partial} \not{\partial}^0 C^* \bar{\psi}^* - m \gamma^0 \psi = 0$$

Multiply by γ^0 , note that $(\gamma^0)^2 = I$ and make use of $C^* = C$:

$$-i \not{\partial} \gamma^0 C \psi^* - m \psi = 0$$

The above is just the definition of the conjugate, so conclude that

$$i \not{\partial} \psi_c - m \psi = 0$$

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Sice jsme ten důkaz chtěli přesně
obráceně, ale kreativita se cení

Skoro jsi vyřešila neřešitelnou
aprílovou úlohu. Respekt!