

# Electromagnetic Structures

## From Micro to Macro

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February 15–17, 2019

# Contents

- Plasma scalability;
- Microscopic phenomena;
- Extended Gold scenario;
- The case of 'Oumuamua;
- Interstellar filaments;
- Cycles and alignments.

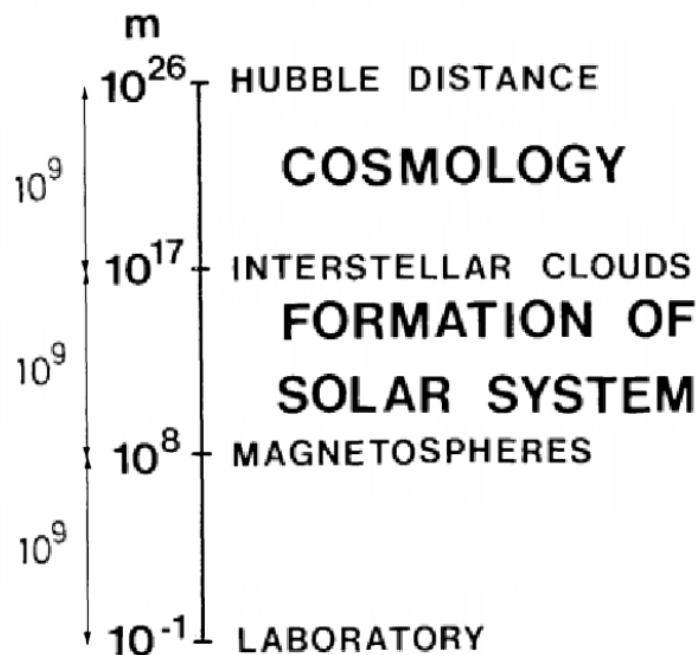
*The idea:* electromagnetism might be the key force, governing the behaviour of bodies on all observable scales.

OTF'17 and OTF'18: structures in the atmosphere and oceans;  
OTF'19 → smaller and larger structures.

"What good is my reason! Doth it long for knowledge as the lion for his food?"  
(F. Nietzsche, *Thus Spake Zarathustra*)

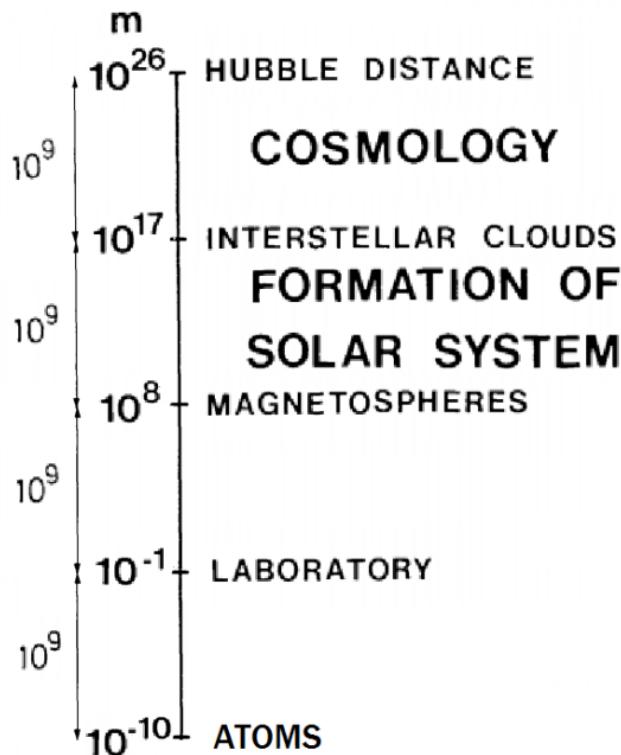


# COSMIC TRIPLE JUMP



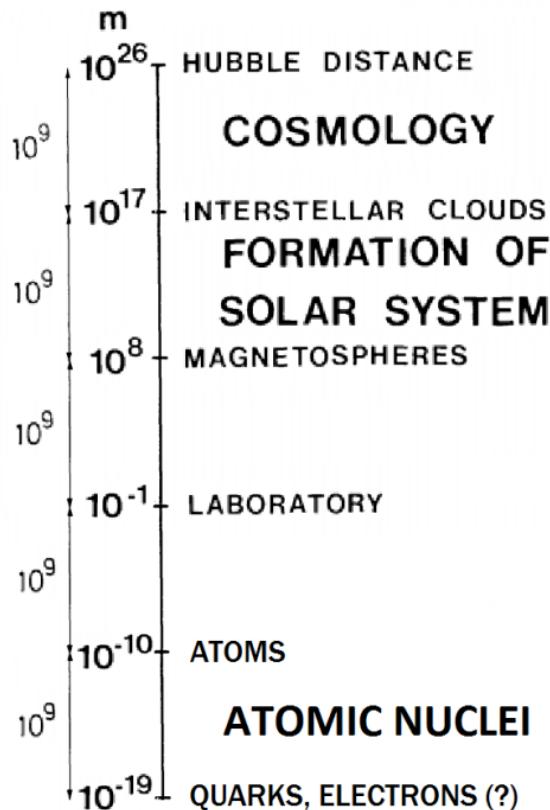
H. Alfvén.  
On hierarchical cosmology.  
Astrophysics and Space  
Science, vol. 89, no. 2, 1983,  
p. 313–324.

# COSMIC QUADRUPLE JUMP



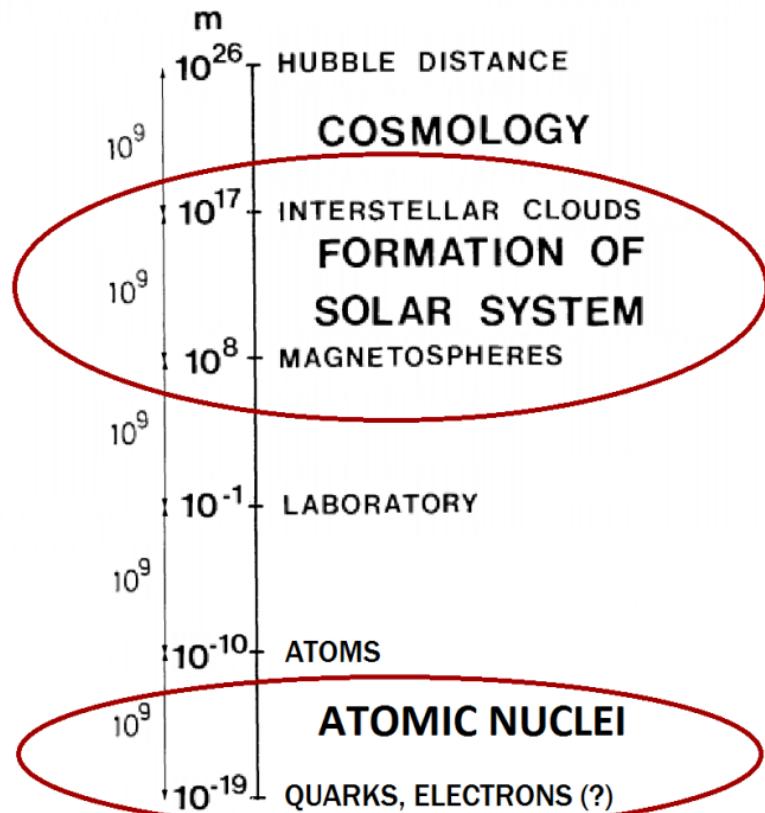
E. Bagashov  
Electromagnetic Phenomena:  
From Micro to Macro.  
OTF2019 presentation  
(Albuquerque, Feb. 17, 2019).

# COSMIC QUINTUPLE JUMP



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# COSMIC QUINTUPLE JUMP



E. Bagashov  
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# Could microscopic phenomena be caused by *electromagnetism only*?

THERE ARE FOUR FUNDAMENTAL FORCES BETWEEN PARTICLES:  
**(1) GRAVITY**, WHICH OBEYS THIS INVERSE SQUARE LAW:

$$F_{\text{gravity}} = G \frac{m_1 m_2}{d^2}$$



**(2) ELECTROMAGNETISM**, WHICH OBEYS THIS INVERSE-SQUARE LAW:

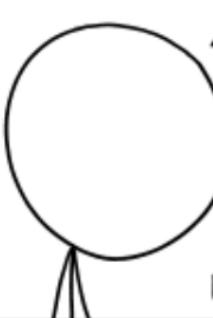
$$F_{\text{static}} = k_e \frac{q_1 q_2}{d^2}$$

AND ALSO MAXWELL'S EQUATIONS



**(3) THE STRONG NUCLEAR FORCE**, WHICH OBEYS, UH...  
 ...WELL, UMM...

...IT HOLDS PROTONS AND NEUTRONS TOGETHER.



I SEE.

IT'S STRONG.

AND **(4) THE WEAK FORCE**. IT [MUMBLE MUMBLE] RADIOACTIVE DECAY [MUMBLE MUMBLE]

THAT'S NOT A SENTENCE.  
 YOU JUST SAID 'RADIO-  
 -AND THOSE ARE THE  
 FOUR FUNDAMENTAL  
 FORCES!



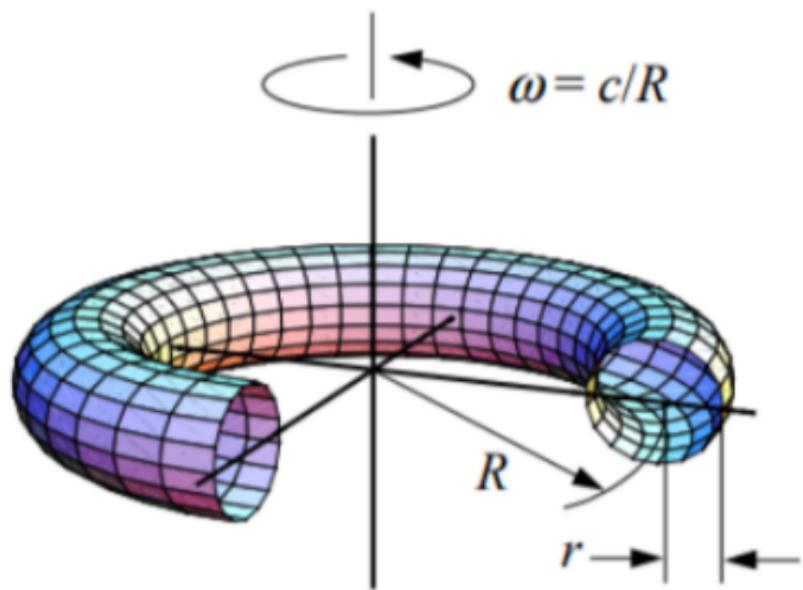
A. Kovacs, W. L. Stubbs. Is it time to properly solve the electromagnetic wave equation?

(Investigation of electron mediated nuclear reactions. Journal of Condensed Matter Nuclear Science, 29, 2019 *in print*

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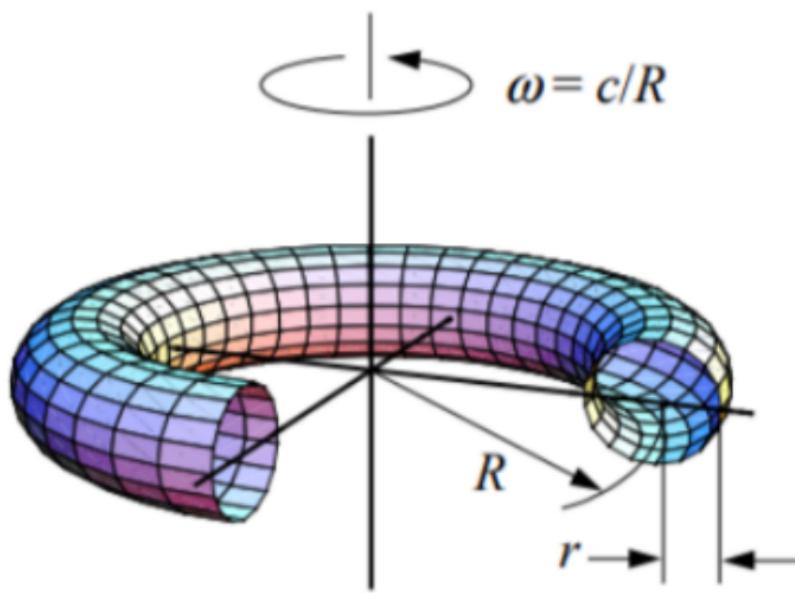
F. Celani, A. O. Di Tommaso, G. Vassallo. The Electron and Occam's Razor. J. Condensed Matter Nucl. Sci., 25, 2017, p. 76–99).

Hypothesized structure of the electron:



$R$  – reduced Compton wavelength ( $R = \frac{\hbar}{mc}$ ),  $r$  – electron charge radius.

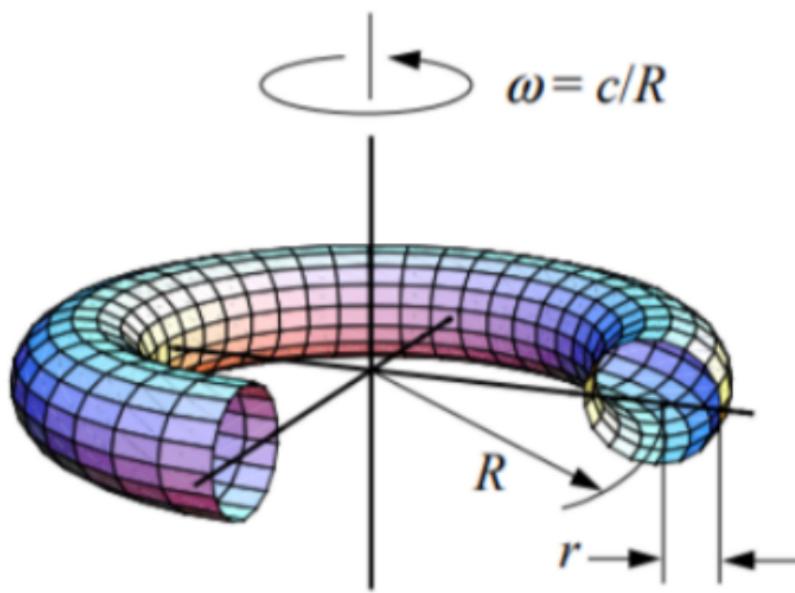
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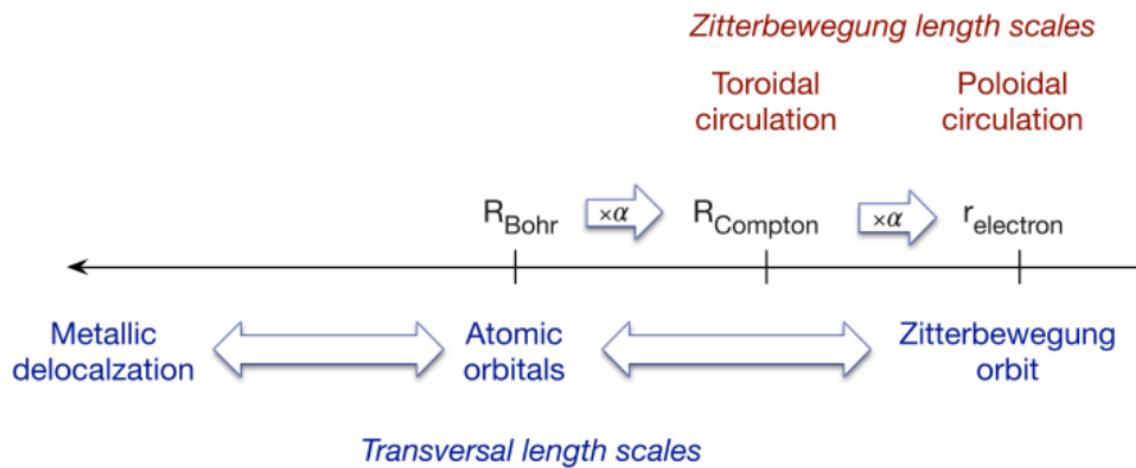
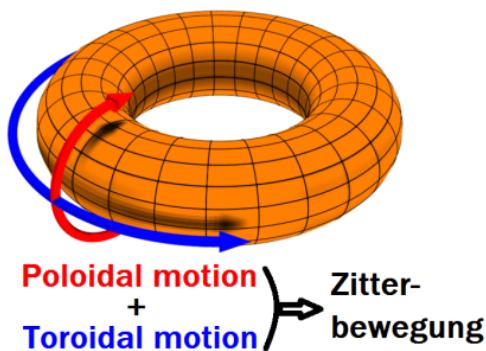
Motion around the torus → *Zitterbewegung* ("flickering/trembling motion").

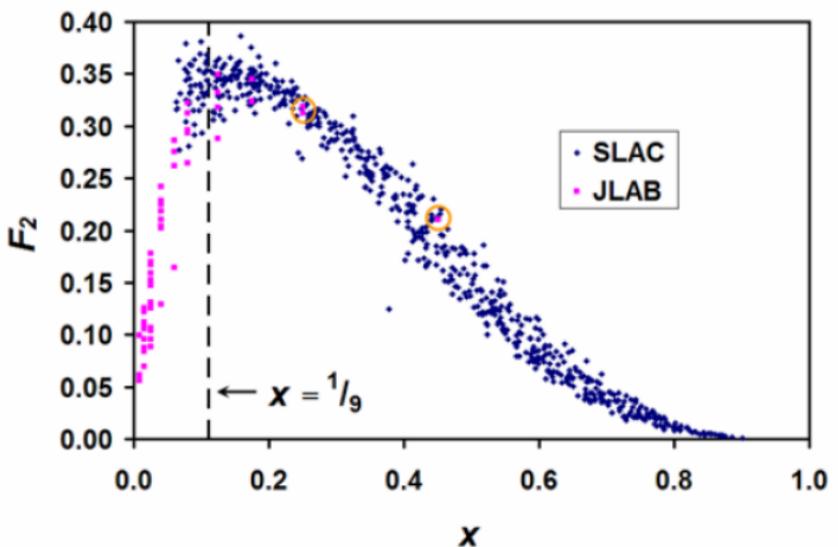
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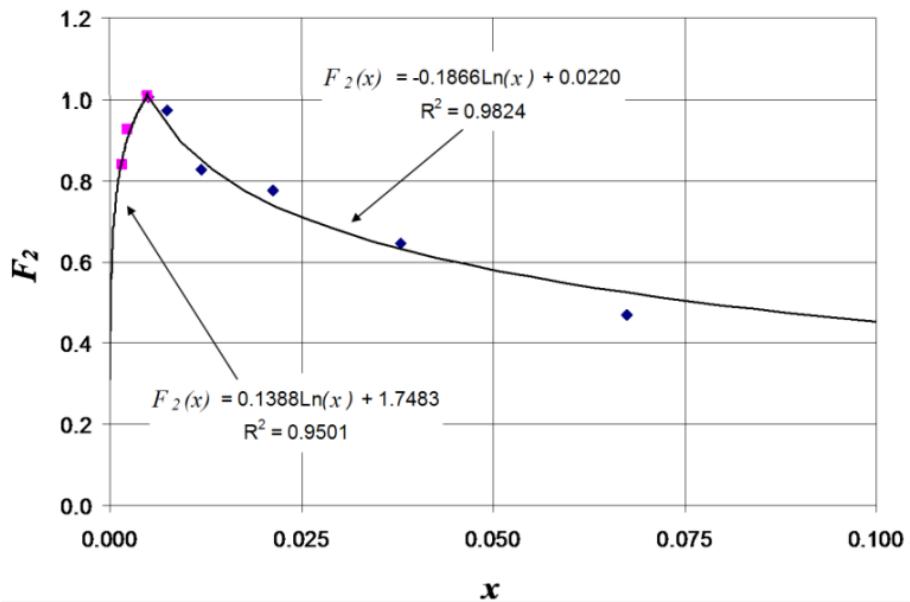
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" This data indicates that the proton's comprises short-lived particle-antiparticle pairs, where the virtual particle has  $1/9$  times the proton mass." (Muons?)

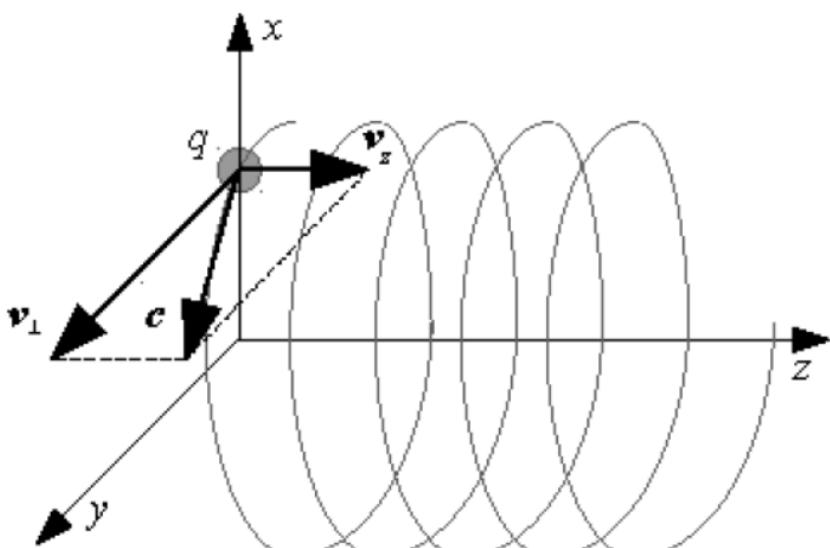


" This data indicates that the muon comprises short-lived particle-antiparticle pairs, where the virtual particle has about 1/200 times the muon mass."  
(Electrons?)

## Other hints:

- Spin of elementary particles;
- Neutrinos as magnetic monopole – antimonopole pairs?
- Heisenberg's uncertainty?
- Pauli's exclusion principle?
- “Real” character of quantum wavefunction?

F. Celani, A. O. Di Tommaso, G. Vassallo. Maxwell's Equations and Occam's Razor. J. Condensed Matter Nucl. Sci., 25, 2017, p. 100–128.



$$v_z^2 + v_{\perp}^2 = c^2$$

$v_z$  is what is usually understood by velocity.

The paper derives everything from vector potential  $A_\mu$ , as is usually done.  
The *scalar part* of the field arises:  $G = S + \frac{1}{c}(\vec{E} + Ic\vec{B})\gamma_t$ .  
But why wasn't it seen before?\*

Because of gauge fixing!

- Lorenz gauge:  $\partial_\mu A^\mu = 0$ ;
- Coulomb gauge:  $A_0 = 0$ ,  $\text{div } \vec{A} = 0$ ;
- Weyl gauge:  $A_0 = 0$ ;
- etc.

These are *artificial restrictions*, usually applied to the equations of the electromagnetic field. They *eliminate* these degrees of freedom. Is it justified?..

\*it actually was

Local gauge invariance principle – possible consequence of the actual structuring of matter?

Standard model:

- SU(3) group – strong interactions;
- SU(2) group – weak interactions;
- U(1) group – electromagnetism.

Symmetries of *imaginary rotations of imaginary objects in imaginary space*.

Or maybe the consequence of the real structure of real objects in real space?

# A. Kovacs, W. L. Stubbs. Is it time to properly solve the electromagnetic wave equation?

Newly identified relations	Accuracy	How was the relation identified?
$m_{muon} = \frac{3}{2}m_{electron}(1 + \frac{1}{\alpha})$	99.9%	According to $\times 3$ fermionic scaling of the 35.27 MeV base structure
$\frac{r_{pion}}{r_{proton}} = \frac{3}{4}$	99%	According to the ratio between $\times 3$ fermionic and $\times 4$ bosonic scalings
$\mu_N \left(1 - \frac{r_{proton}}{2\pi R_{proton}}\right)^{-1} = \mu_{proton}$	99%	Through the accounting of the “anomalous” magnetic moment
$m_{\pi^\pm} - m_{\pi^0} = 9m_{electron}$	99.9%	According to quantized electron-positron pair oscillations, as revealed by high energy scattering data

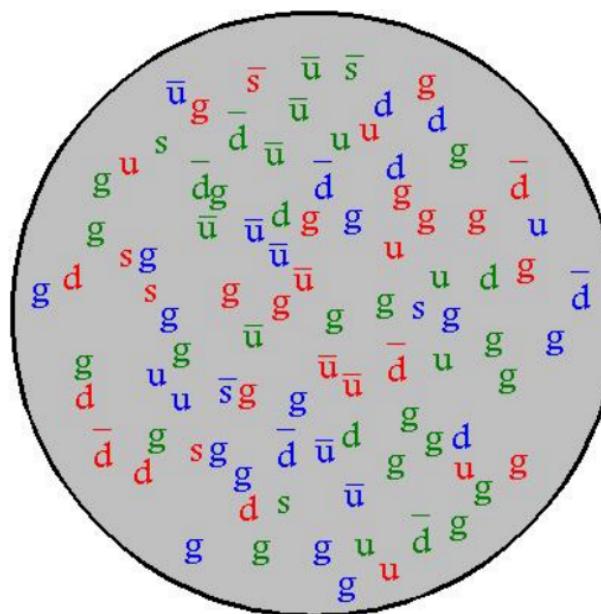
“... using the pion mass basis, heavier particle masses are following the  $(1 + 3n)m_\pi$  rule”

“Using the muon mass basis, heavier particle masses are following the  $(1 + 8n)m_\mu$  rule”.

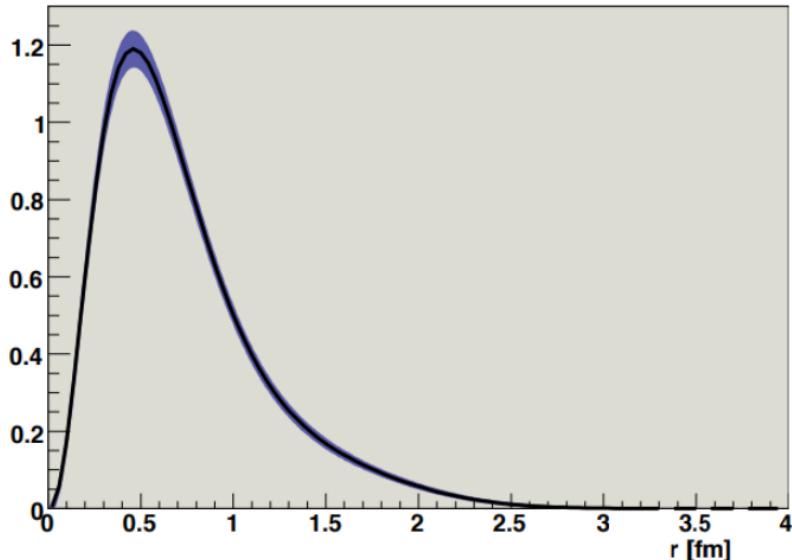
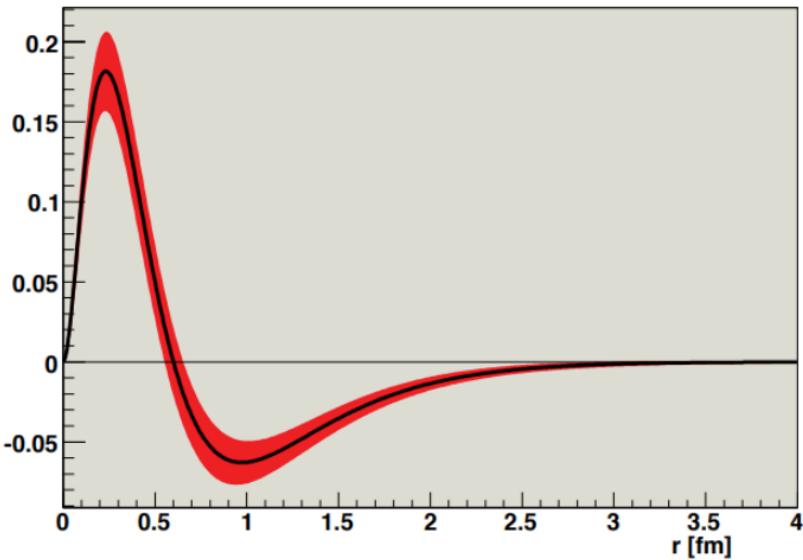
*My comment:* the same structure as in SU(3) group!

(3 basis vectors, 8 group generators in the adjoint representation  $\leftrightarrow$  3 “quarks” and 8 “gluons”).

# Quarks as quasiparticles?..



Fractional charge ( $1/3$ ) – just like in condensed matter physics (e.g. fractional Hall effect – quasi-particles with fractional charge).



Charge distributions in a neutron and a proton.

The Frontiers of Nuclear Science, A Long Range Plan (2008). The DOE/NSF Nuclear Science Advisory Committee. <https://arxiv.org/abs/0809.3137>

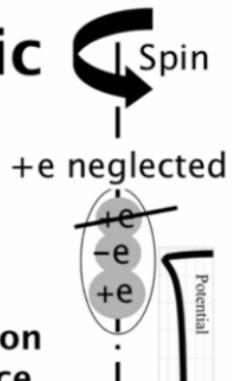
B. Schaeffer. Electromagnetic Nature of Nuclear Energy: Application to H and He Isotopes. World Journal of Nuclear Science and Technology, 3, 2013, p. 1–8.

## Deuteron electromagnetic structure

Neutron dipole induced by the proton

Deuteron non-zero quadrupole

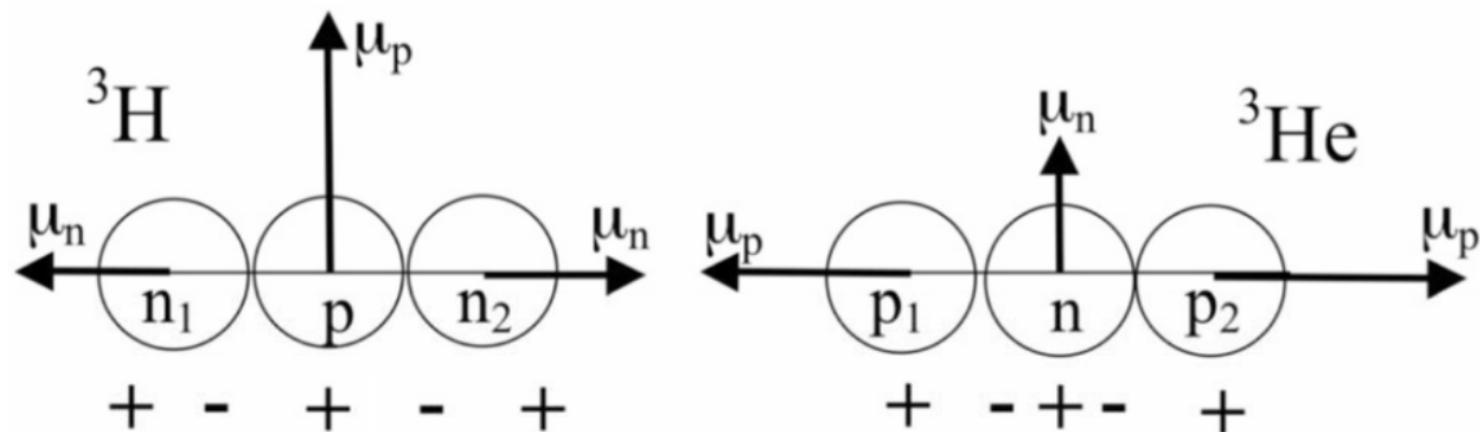
Electrostatic induction means neutron-proton attractive force



Neutron  $\mu_n < 0$   
Proton  $\mu_p > 0$

Deuteron magnetic moment  
 $\mu_D = \mu_p - |\mu_n| > 0$

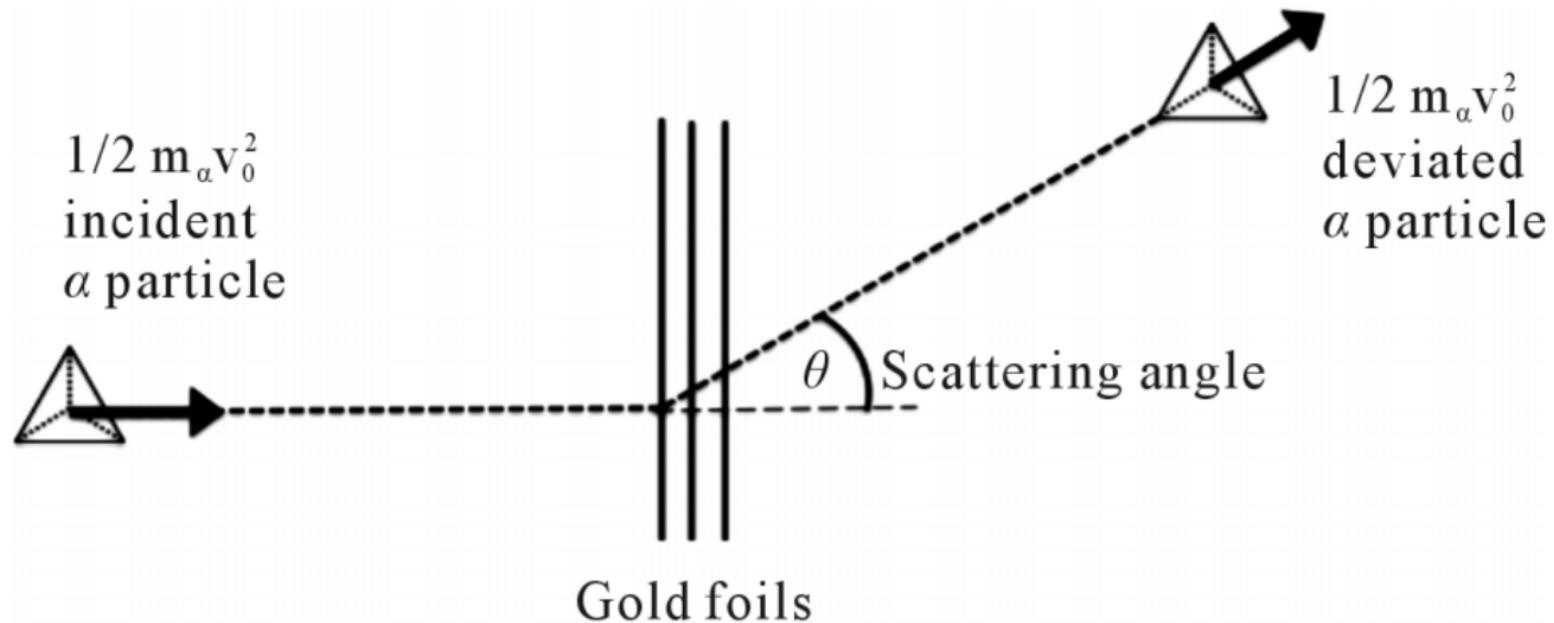
Opposite magnetic moments means repulsive force

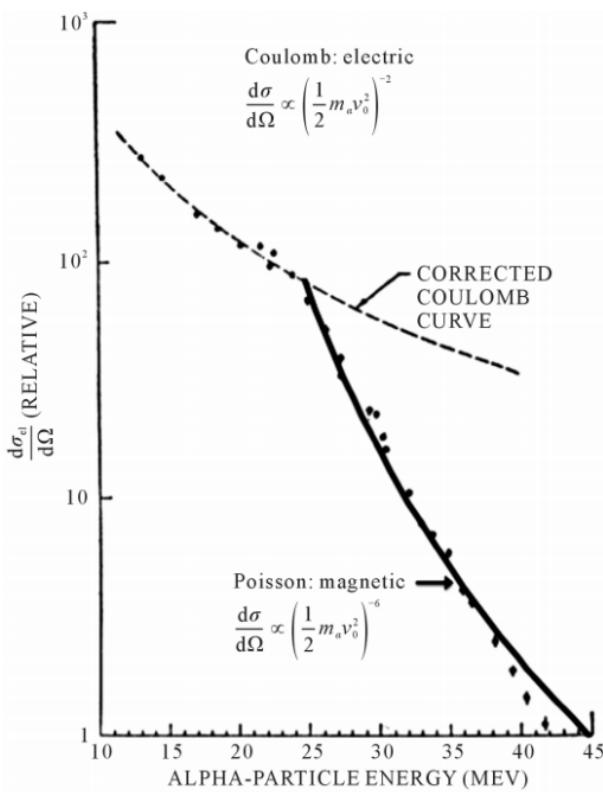


In essence: nuclear forces are the result of electrostatic polarization of neutrons by protons + their magnetostatic interaction.

Claims of successful prediction of binding energies.

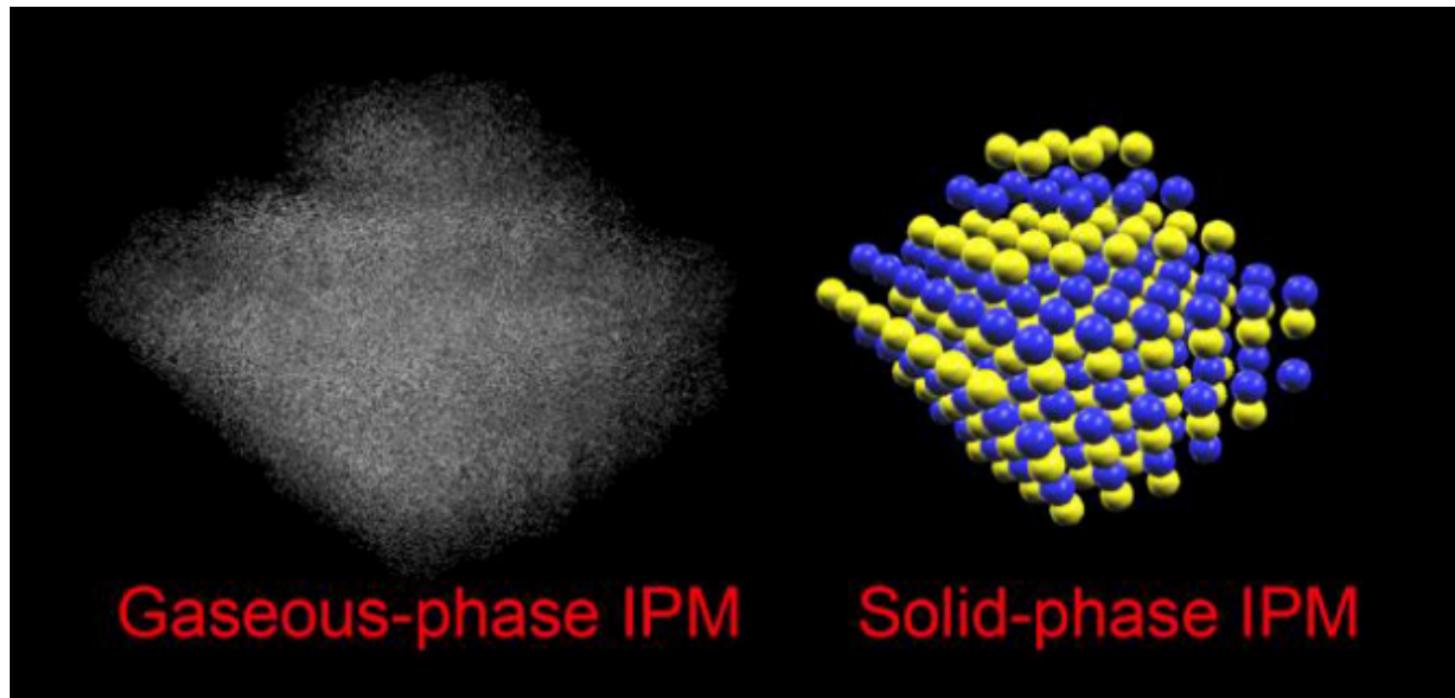
B. Schaeffer. Anomalous Rutherford Scattering Solved Magnetically. World Journal of Nuclear Science and Technology, 6, 2016, p. 96–102.

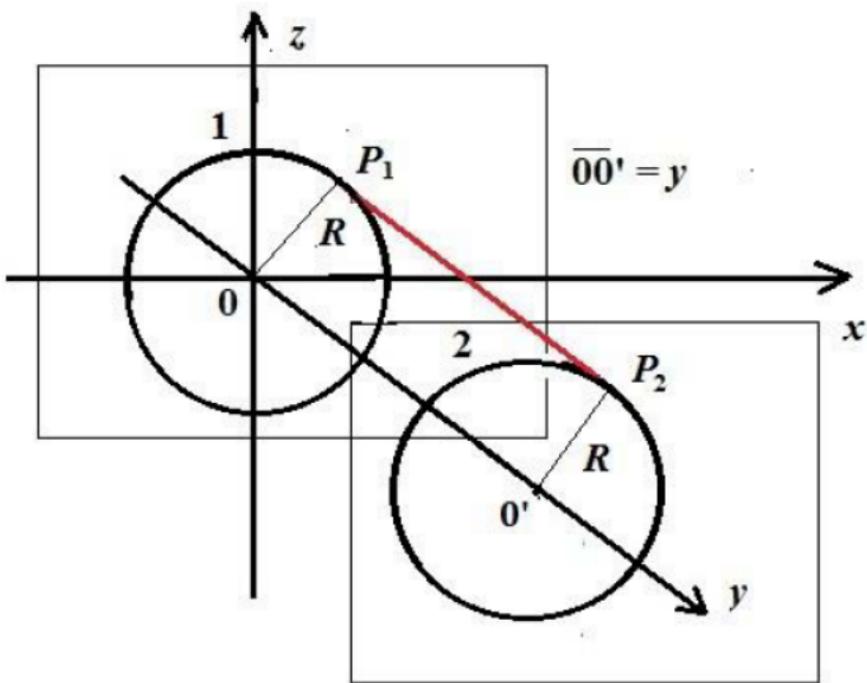




At high energies the electrostatic repulsion is replaced by magnetic repulsion.

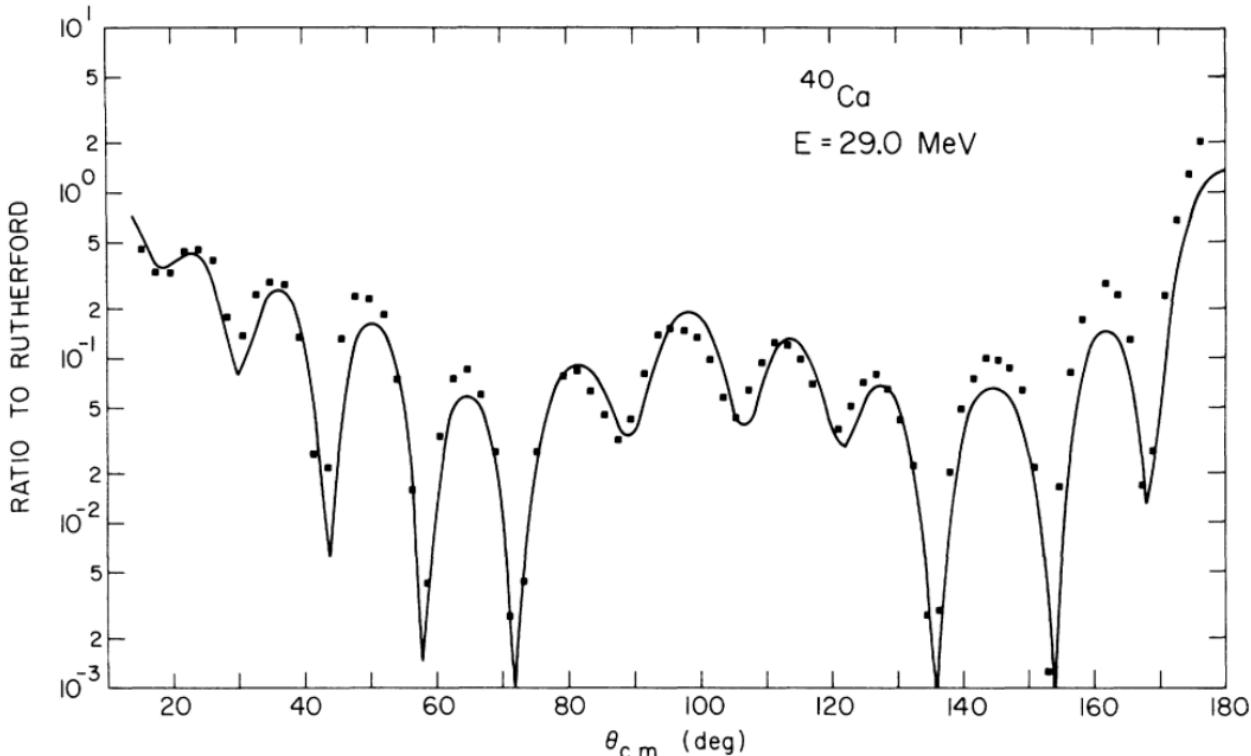
P. Di Sia. The “Renaissance” in Nuclear Physics: Low-Energy Nuclear Reactions and Transmutations. World Scientific News, 114, 2018, p. 195–207.



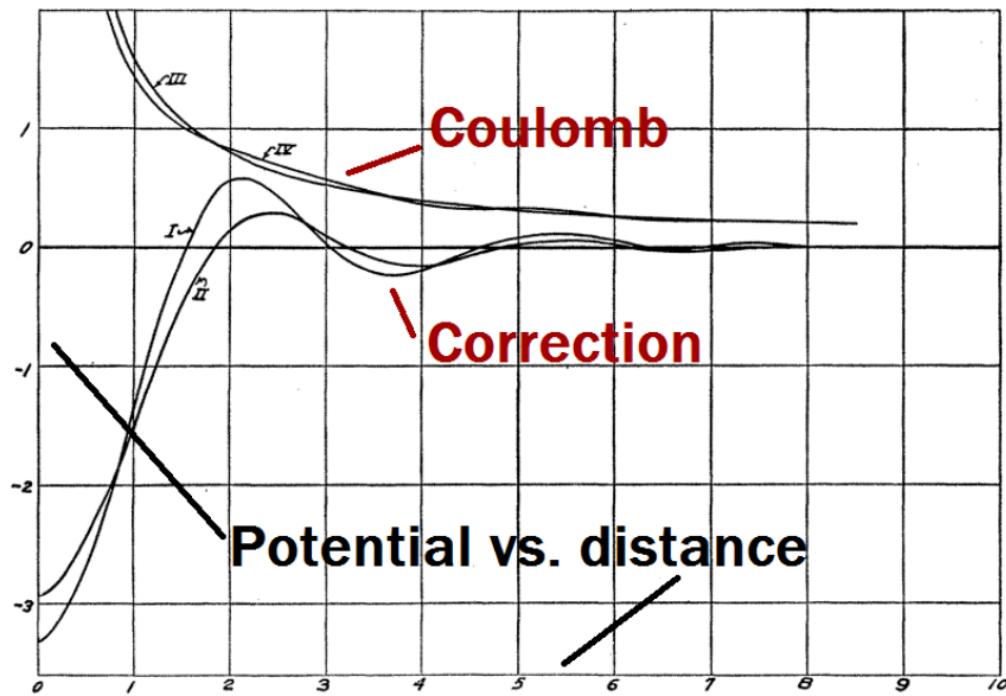


In essence: quasi-solid state of the nuclear matter with magnetic interaction between the nucleons.

N. S. Wall. Critique of explanations of the anomalous large-angle scattering of alpha particles. Physical Review C, 14, 1976, p. 2326–2331.

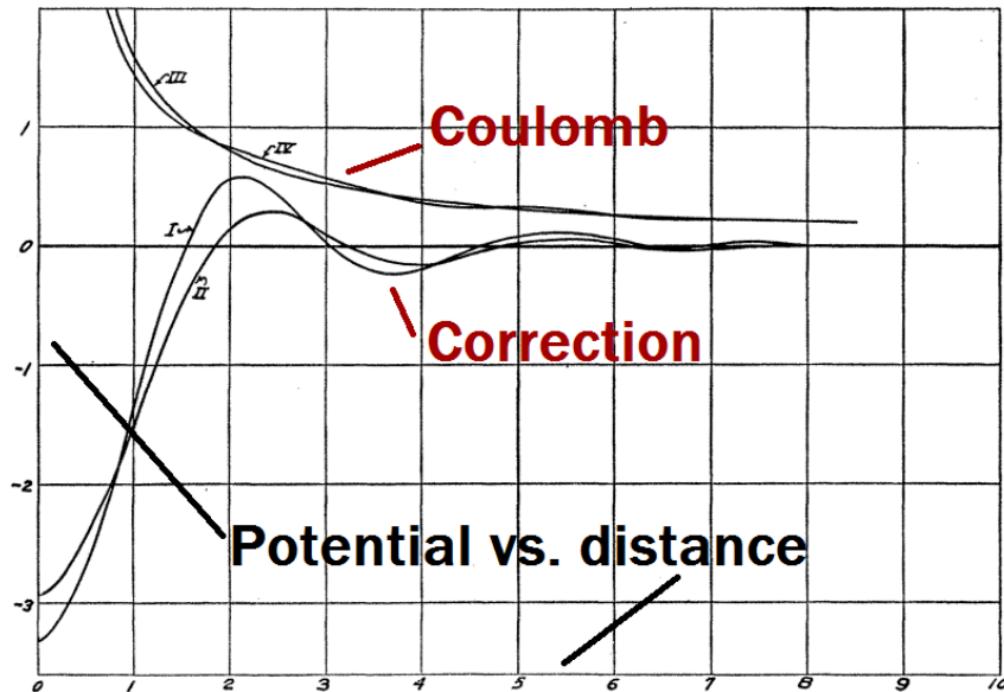


M. Muskat. The Anomalous Scattering of Alpha-Rays. Physical Review, 38, 1931, p. 23–31.



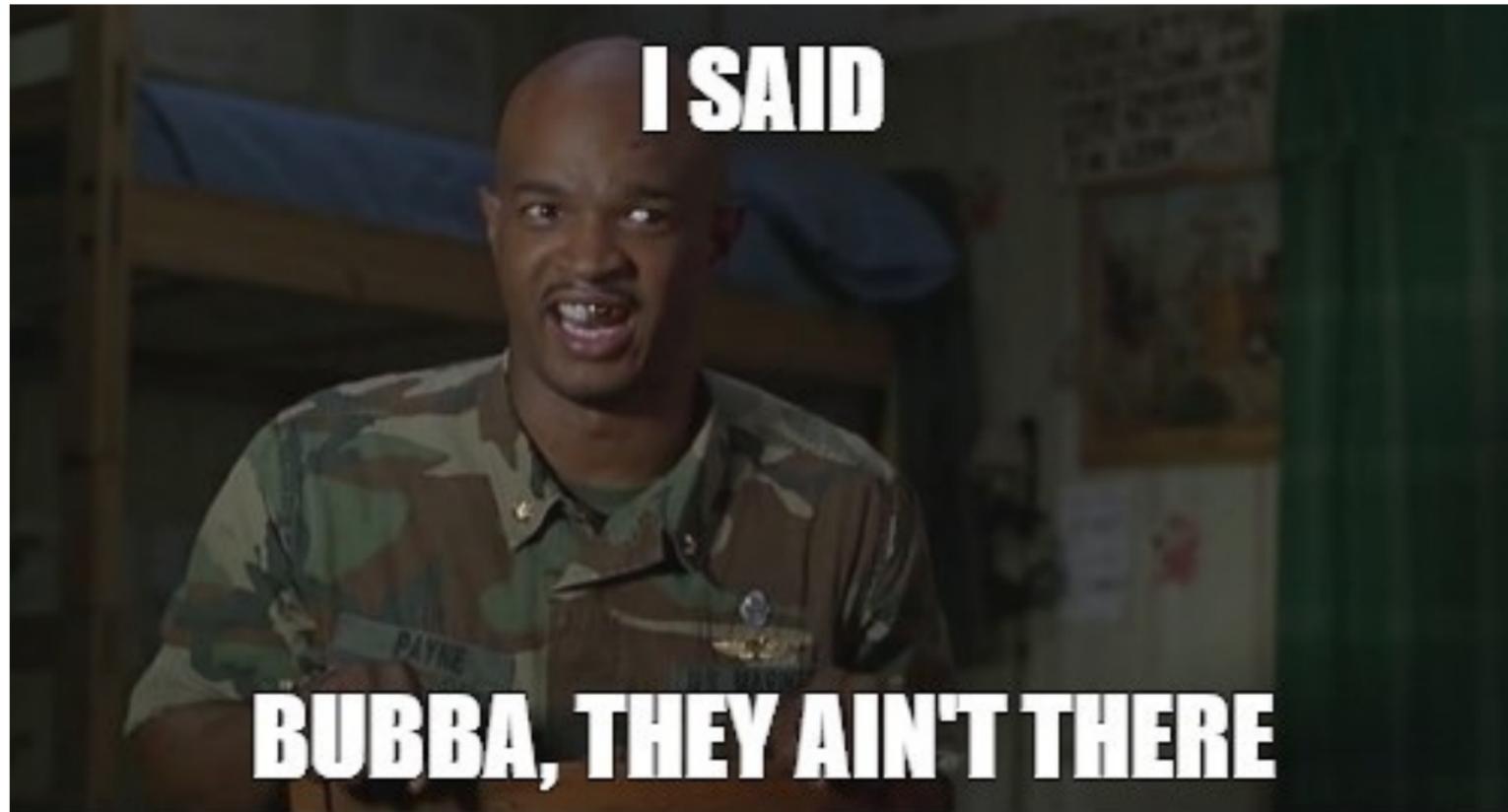
Eliminated in further works?

"... it is equivalent to a series of shells of alternating sign of charge with a spacing of the order of  $1.5 \times 10^{-15}$  m"

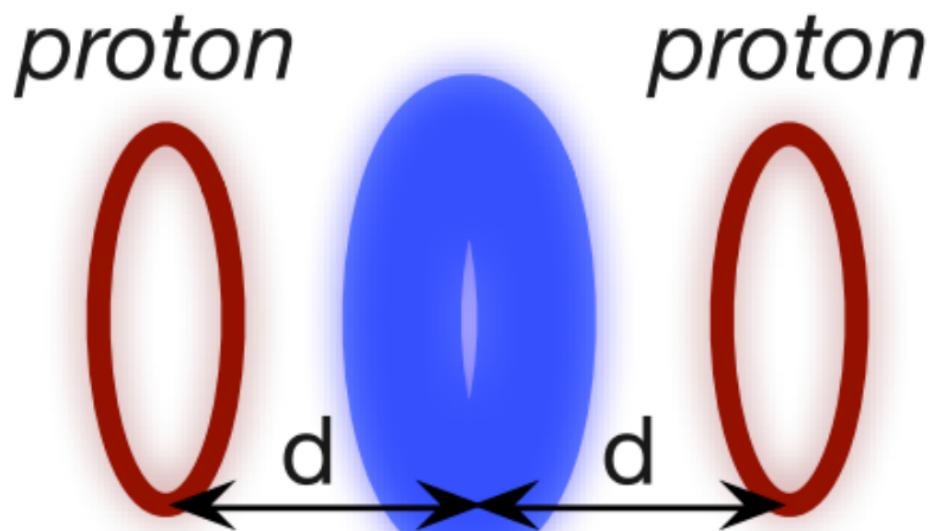


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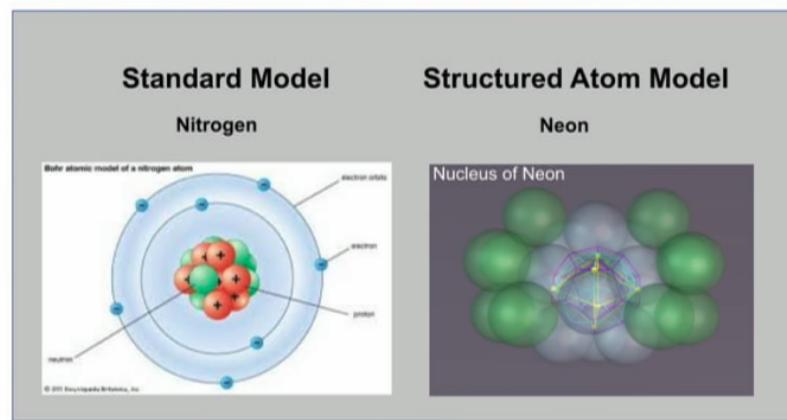


# A. Kovacs, W. L. Stubbs. Is it time to properly solve the electromagnetic wave equation?



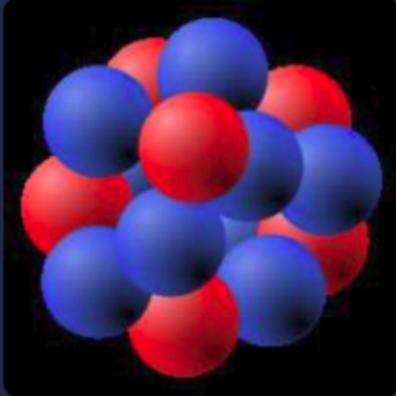
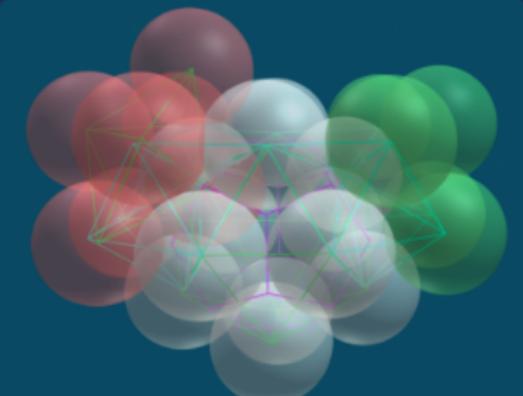
The hypothesized structure of deuteron ( ${}^2\text{H}$ ) nucleus. Blue is the “inner electron”.

## Edwin Kaal: The Proton-Electron Atom – A Proposal for a Structured Atomic Model | EU2017



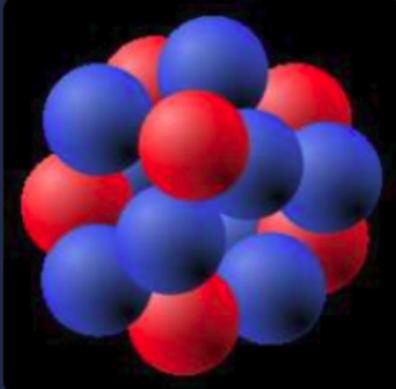
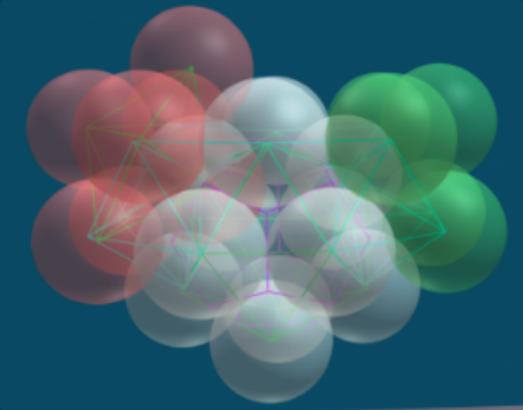
201

Structured Atom Model (SAM) – developed by Edo Kaal.  
[etherealmatters.org/sam](http://etherealmatters.org/sam)

	Standard Model of Atomic Theory	Structured Atom Model™ - SAM™
Structure		
	<i>Chaotic Blob Model of the Atom</i>	<i>The Structured Atom</i>

"Precise fixed structure that grows predictably and determines properties of the elements and the organization of the Periodic Table."

"Neutrons are not fundamental particles but are nuclear electrons shared with neighboring protons."

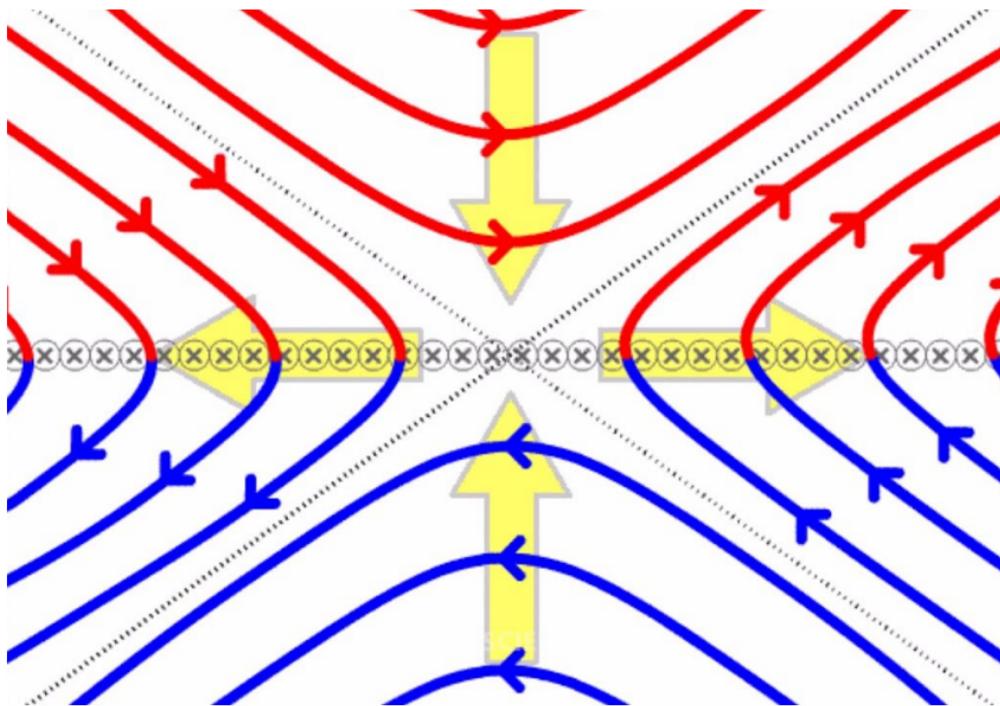
	Standard Model of Atomic Theory	Structured Atom Model™ - SAM™
Structure	 <i>Chaotic Blob Model of the Atom</i>	 <i>The Structured Atom</i>

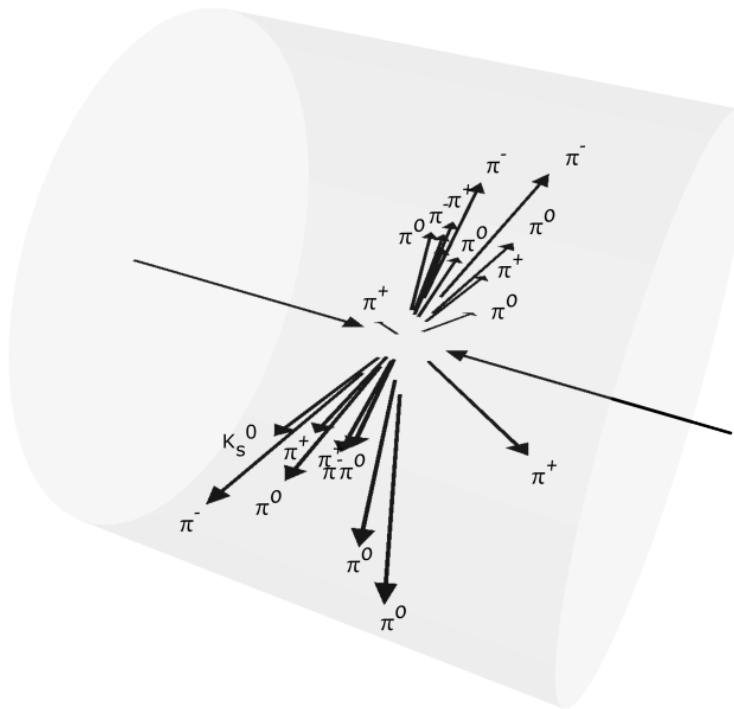
Easy to understand, no need for advanced mathematics/physics, intuitive, visual (and kinda fun to play with), yet pretty detailed.

Various new insights (all explained by the structure):

- Binding energies;
- Stability of the nuclei;
- Connection to chemistry (valency etc.);
- Prediction of possible new elements;
- Low energy nuclear reactions (LENR)?..

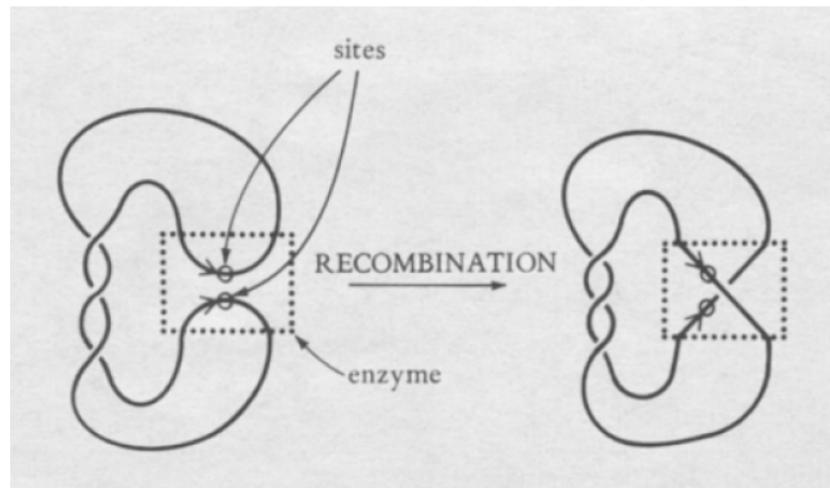
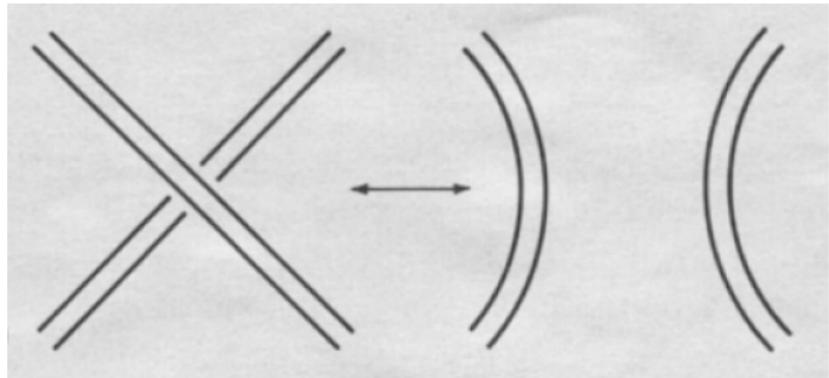
# Lie back and think of reconnection





Hadronization  $\approx$  magnetic reconnection?..

D. W. Sumners. Untangling DNA. *The Mathematical Intelligencer*, 12, 1990,  
p. 71–80.



Reconnection/recombination in DNA (change in topology).

**Philosophical question:** can an object without a structure have *any* properties at all?

Descartes: *res cogitans* (point-like “soul”) vs. *res extensa* (physical world).

*Descartes:*

physical body is anything extended (i.e. anything that has size).

*Newton:*

physical body is “something”, surrounded by “nothing”;

Nietzsche: notion of an atom (i.e. something point-like, indivisible) is a mirror of the idea of a soul (individuum).

Marx: *The Difference Between the Democritean and Epicurean Philosophy of Nature* (PhD thesis).

**Philosophical question:** can an object without a structure have *any* properties at all?

Descartes: *res cogitans* (point-like “soul”) vs. *res extensa* (physical world).



# Conclusion

A *captivating possibility*: making sense of the “epicycles” of nuclear theory and “weirdness” of quantum mechanics through *only* the electromagnetic laws which lead to structure formation.

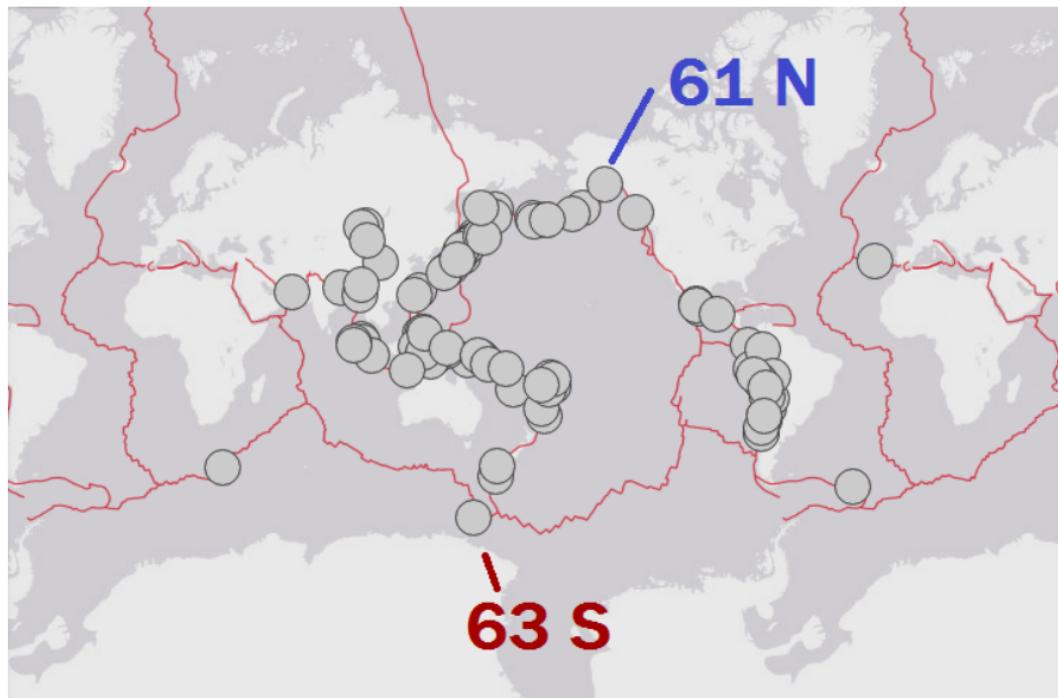
*It seems* there are indications of internal structuring of “elementary particles”.  
*It seems* “weak and strong nuclear forces” might not be needed to explain the behaviour of matter at nuclear and subnuclear scales.

Winston H. Bostick's research (elementary particles as plasmons).

Maybe random processes at microscopic level (e.g. neutron decay) are not that random?..

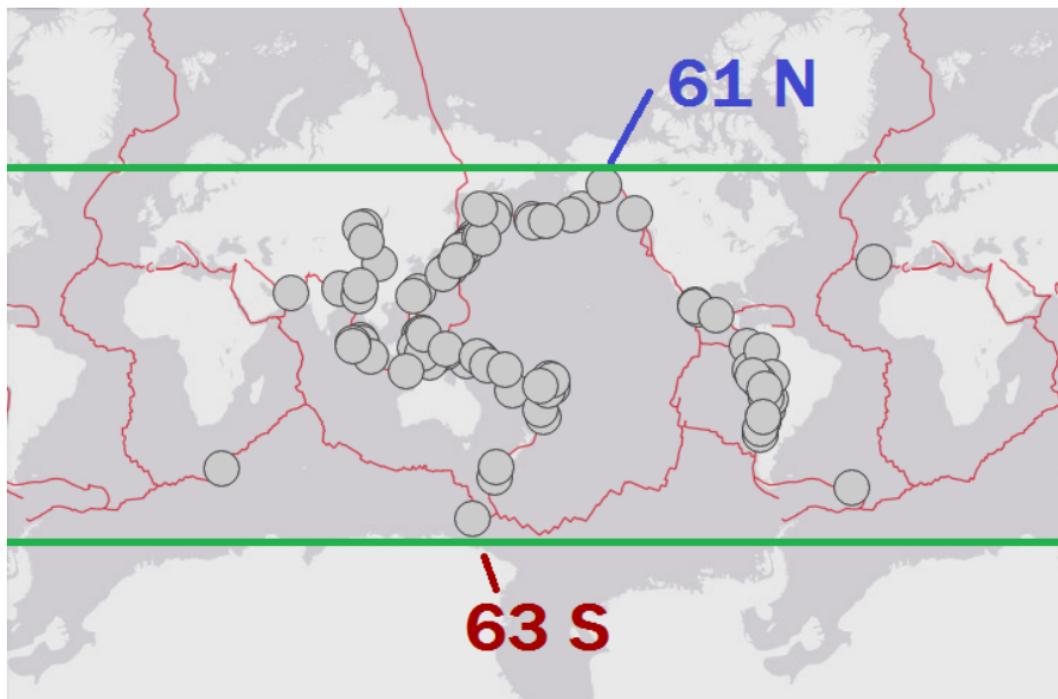
Maybe quantum wavefunctions are “real” physical waves? And/or structures thereof.

The problem: magnitude 8 and above earthquakes only happen between  $\approx 60$  degrees north and south.



(1900–2019, magnitude 8+ earthquakes).

The problem: magnitude 8 and above earthquakes only happen between  $\approx 60$  degrees north and south.

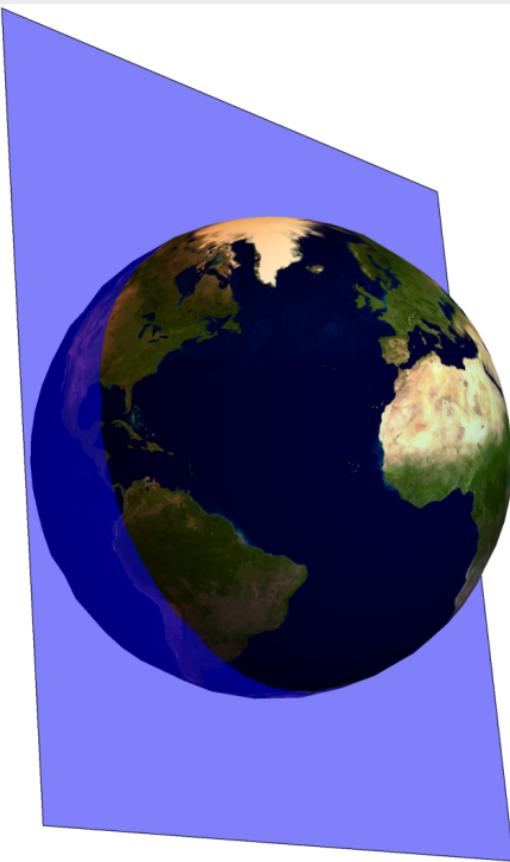


(1900–2019, magnitude 8+ earthquakes).

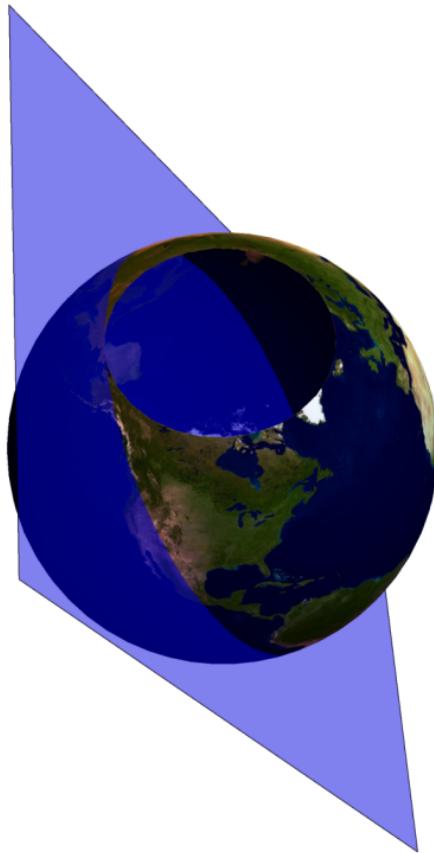
Possible influence from the Galaxy?..

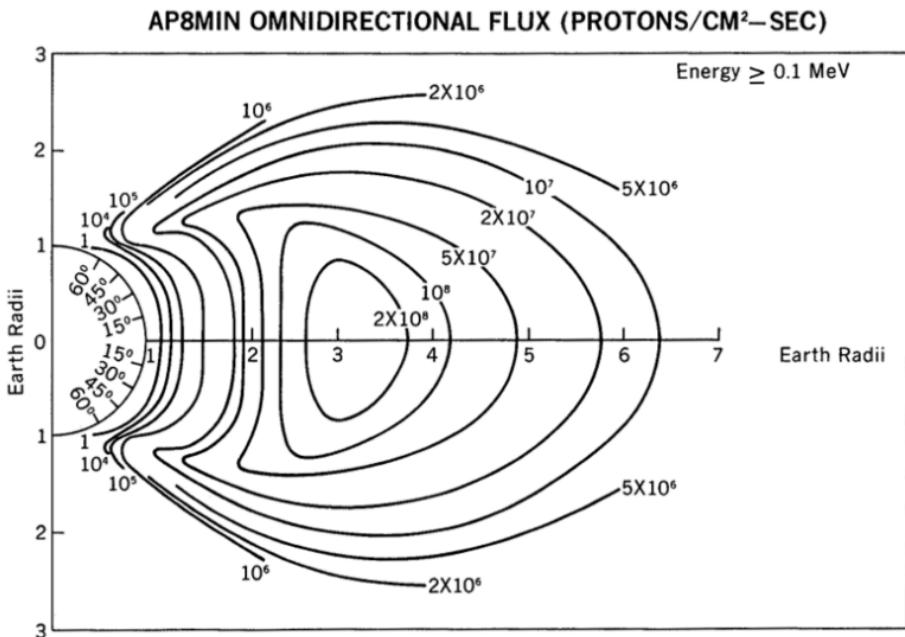
The angle between Earth's spin axis and Galactic north is 63 degrees!

Which means the “earthquake belt” consists of points that cross the galactic plane as the Earth rotates.









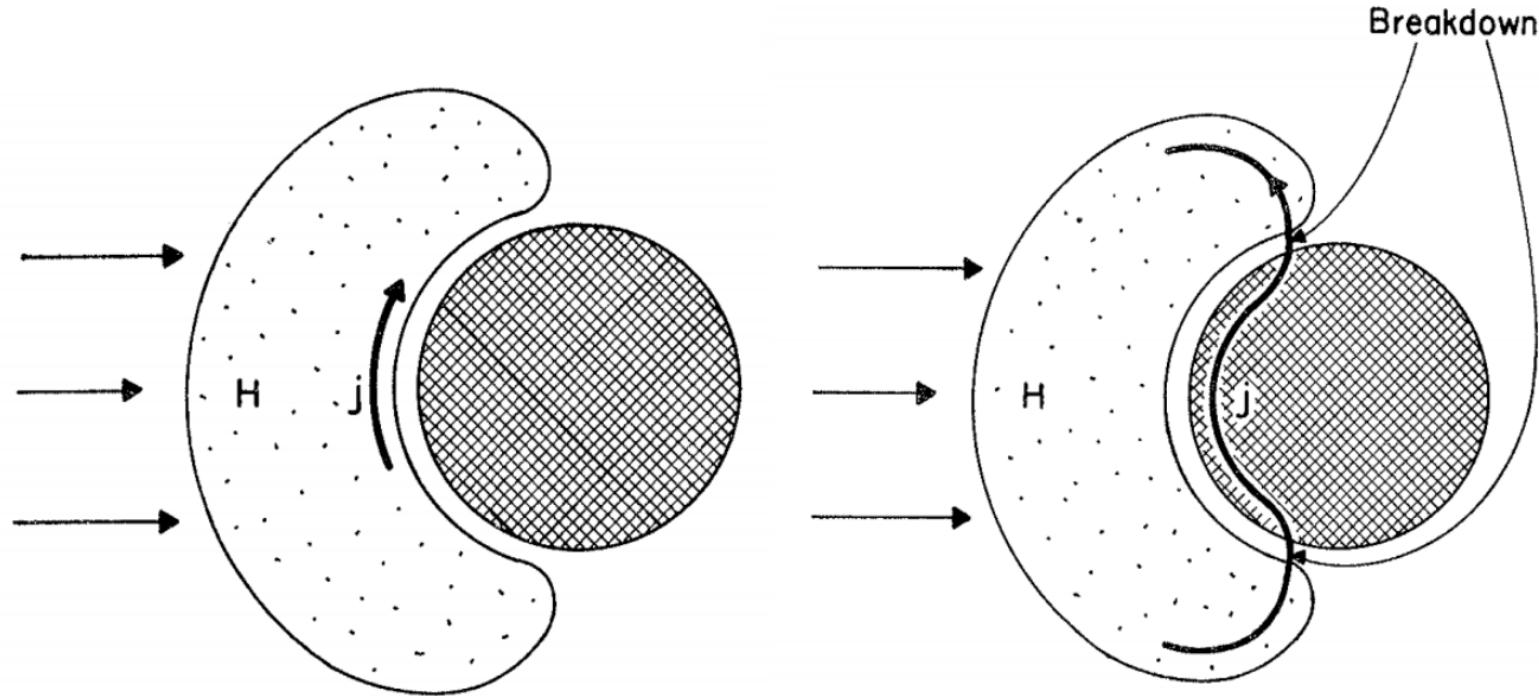
Van Allen belts – roughly the same latitudes as the “earthquake belt”!  
 Inverse piezoelectric effect?.. Contraction of VA belts → mechanical stress  
 on the crust.

# Gold scenario

R. Johnson. Massive Solar Eruptions and Their Contribution to the Causes of Tectonic Uplift. *New Concepts in Global Tectonics*, 2, 2014, p. 16–36.

R. Johnson. Massive solar eruptions and their contribution to the causes of tectonic uplift. Presentation to the SIS Autumn meeting, 29 September 2018.

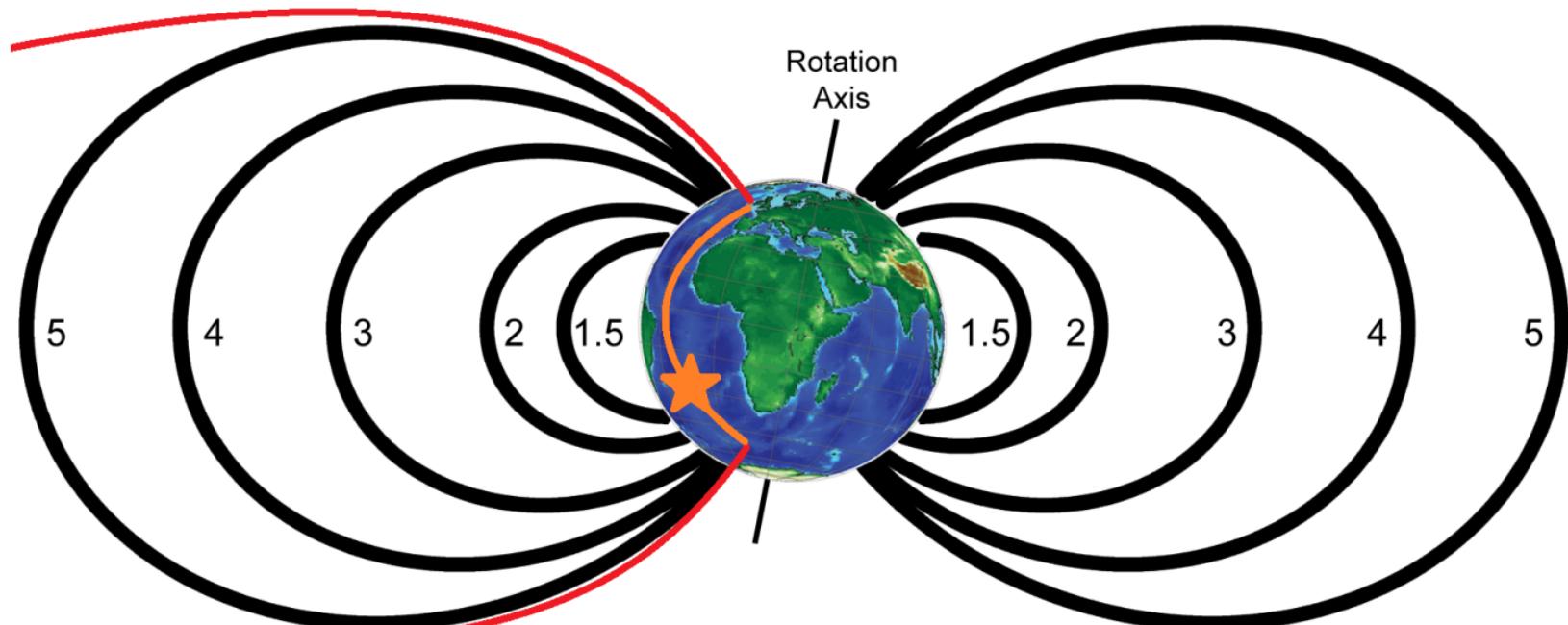
T. Gold. Large Solar Outbursts in the Past. *Pontificiae Academiae Scientiarum Scripta Varia*, 25, 1963, p. 161–174.



1) CME cloud approaches the Earth; 2) Breakdown of the atmosphere occurs, the ionospheric currents run through the crust.

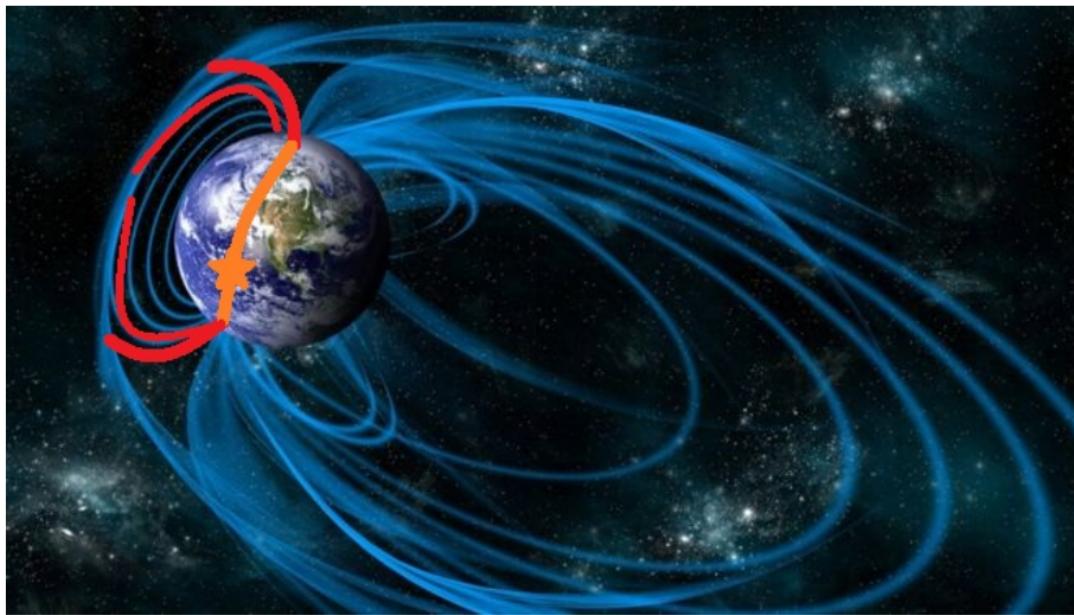
Could “regular” earthquakes be also caused by the similar mechanism? That would explain the existence of the “earthquake belt”.

Connection to solar wind plasma starting from  $\approx 60^\circ$  latitude and above. The proposed currents run mostly in between.

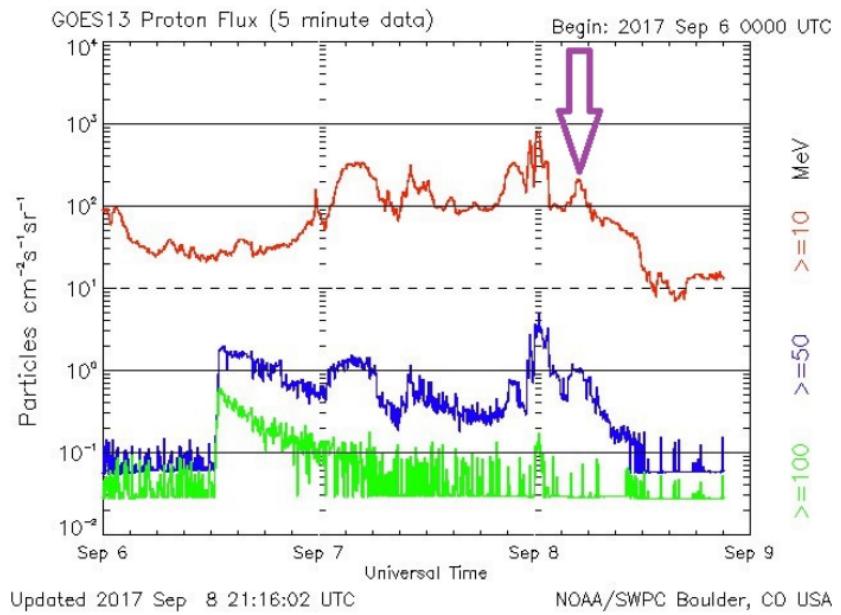
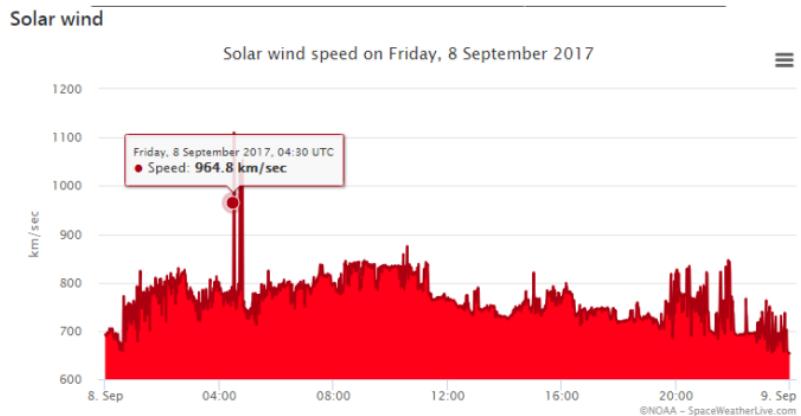


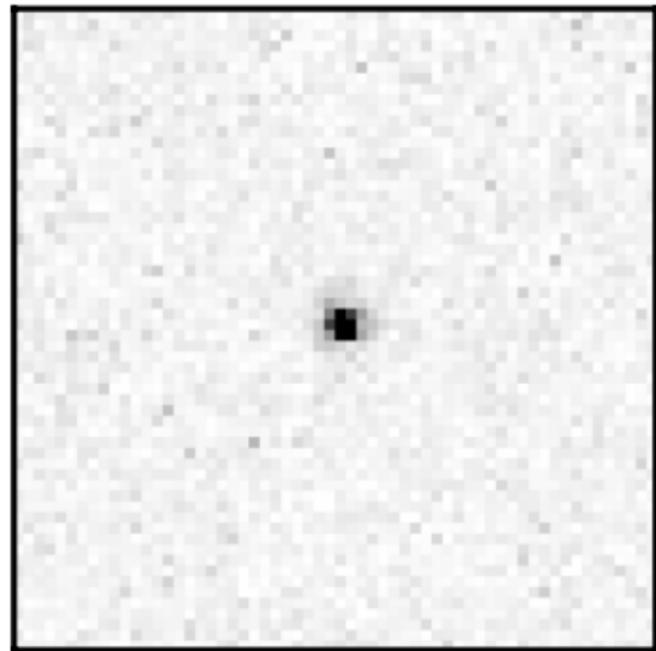
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# Mexico quake (mag 8.2, 04:49 UTC, September 8th, 2017) – proton spike?





HST (3'')

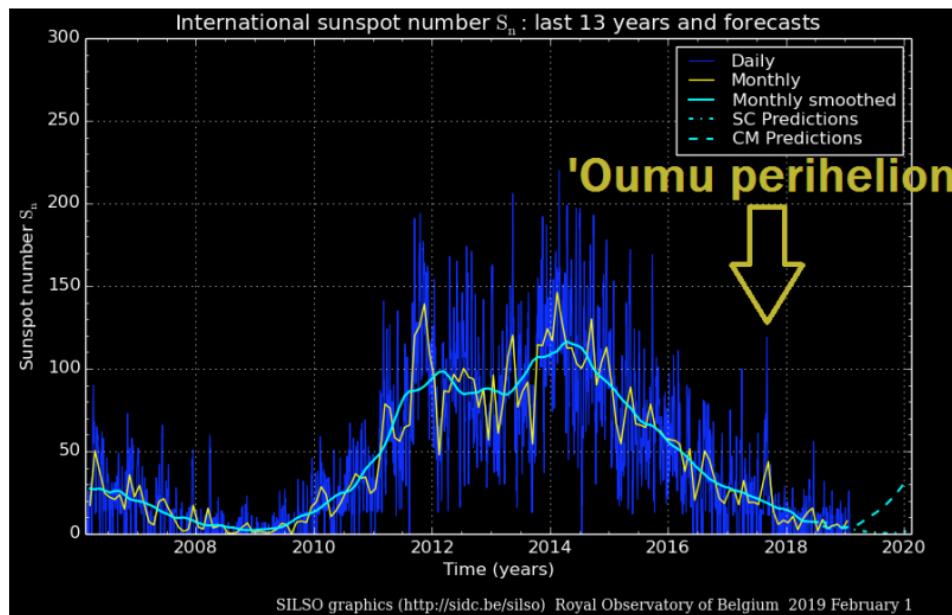


Image of 'Oumuamua vs. *not* an image of 'Oumuamua.

Videos at the Thunderbolts Project YT channel:

- “Interstellar” Asteroid Raises Mysteries | Space News (Dec. 6, 2017);
- “Interstellar” Asteroid Continues to Puzzle | Space News (Jan. 16, 2018);
- Eugene Bagashov: Oumuamua – Surprising Data Leads to Strange Theories | Space News (Dec. 15, 2018);
- Eugene Bagashov: Oumuamua's Strange Acceleration and Other Anomalies | Space News (Dec. 22, 2018);
- Eugene Bagashov: Oumuamua Data Reveals Intriguing Possibilities | Space News (Jan. 5, 2019).

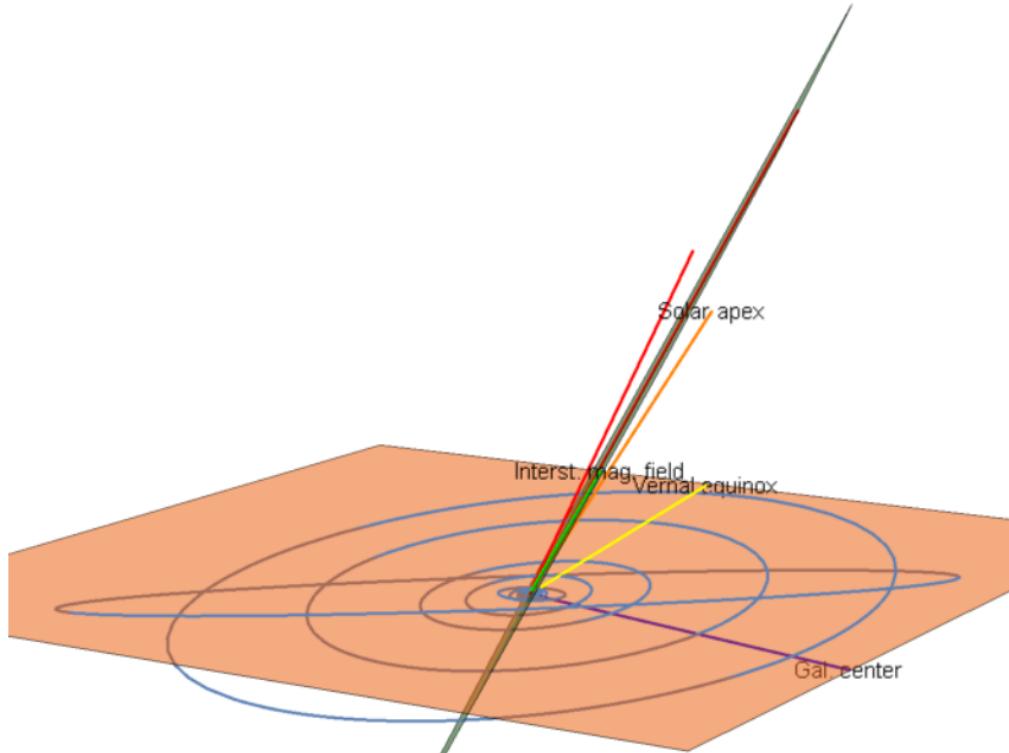
September 6th – strongest solar flare in 12 years (X9.3), highest sunspot area in years (1630 MH);  
September 8th – Mexico quake.  
*September 9th* – 'Oumuamua's [assumed] perihelion.

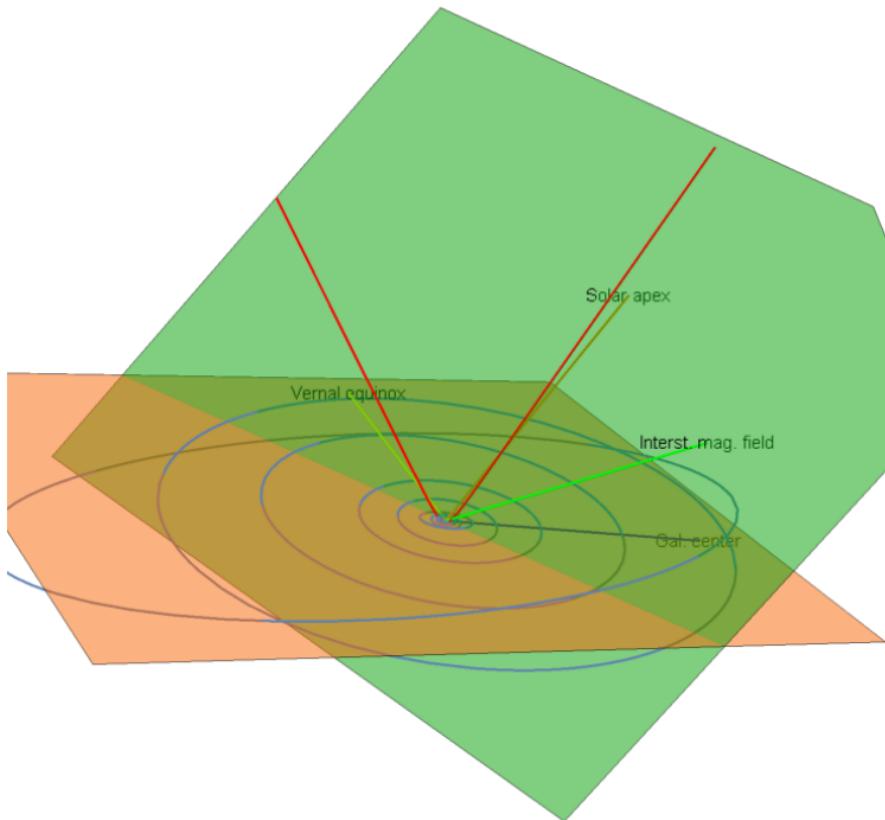


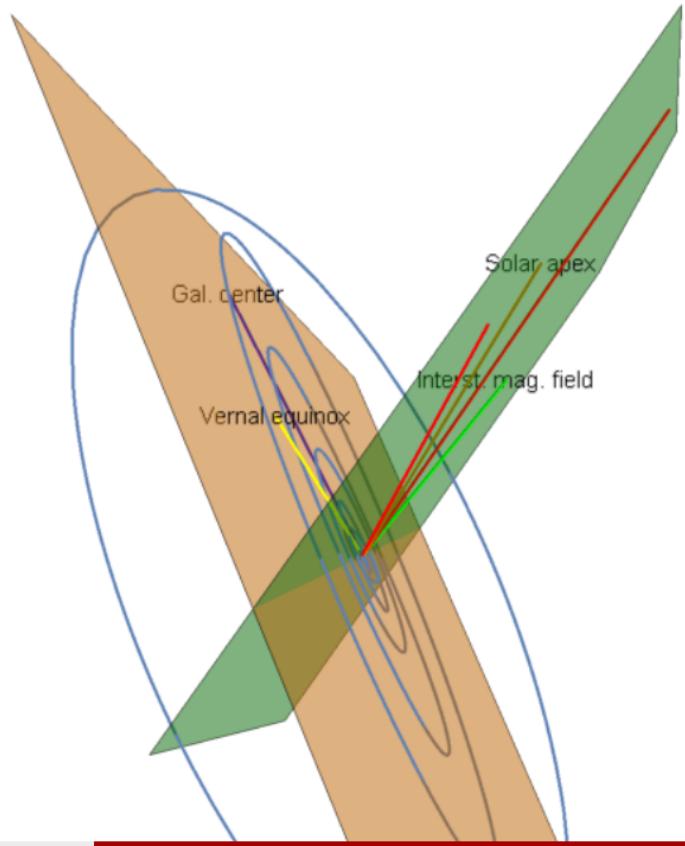
Did 'Oumuamua's appearance cause the increase in solar activity?..

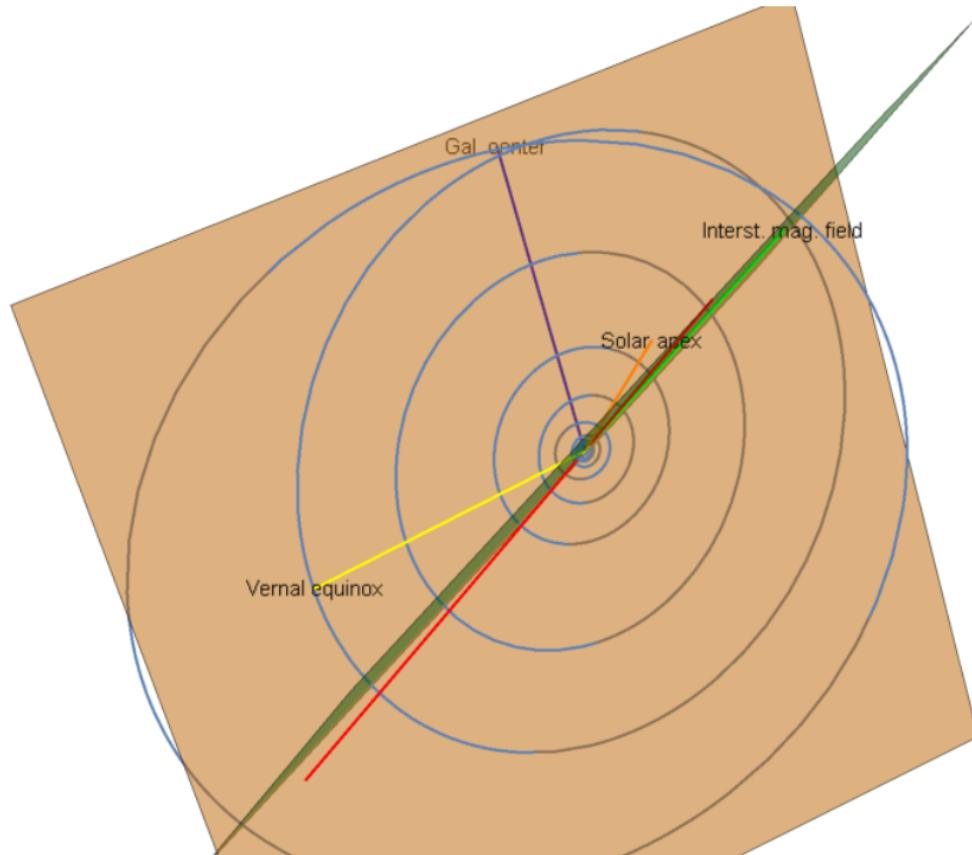
Did 'Oumuamua's appearance cause the increase in solar activity?..

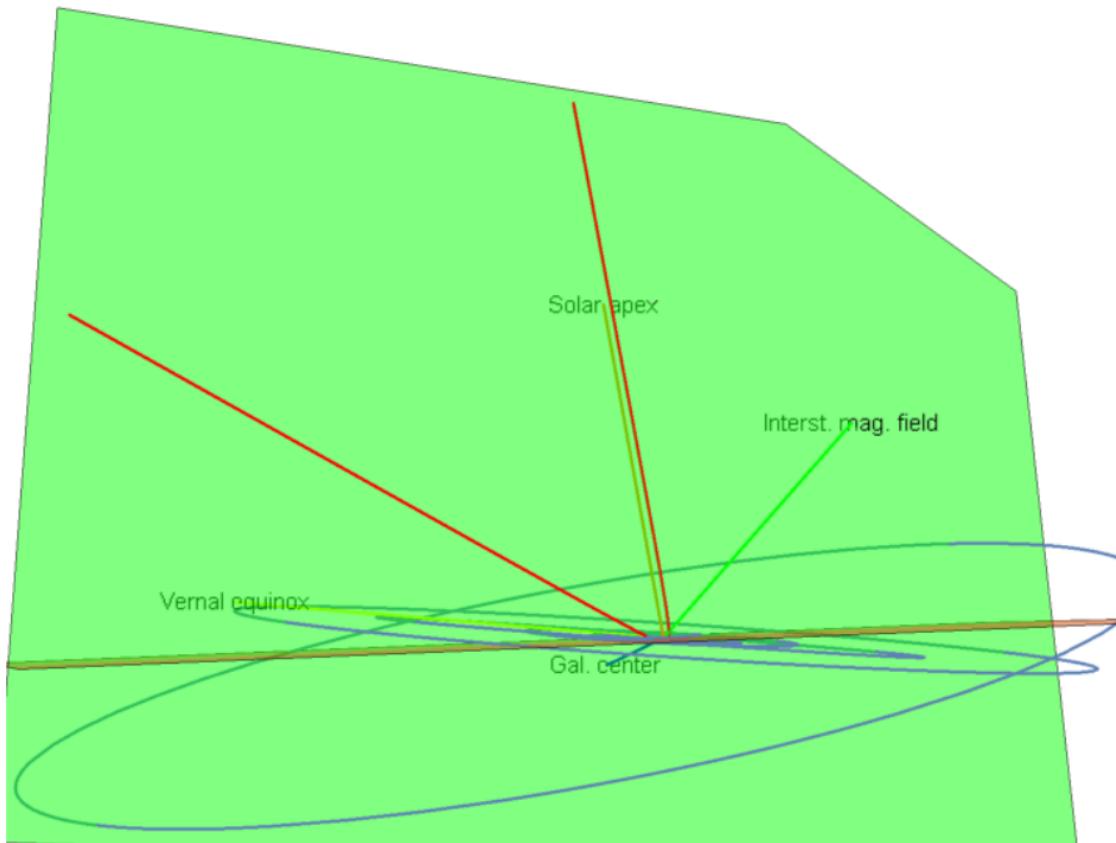
**Or was it caused by this increase?**

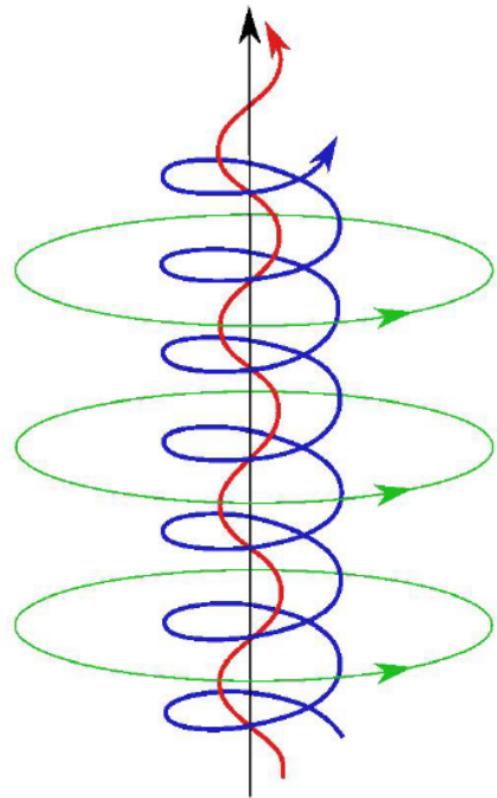












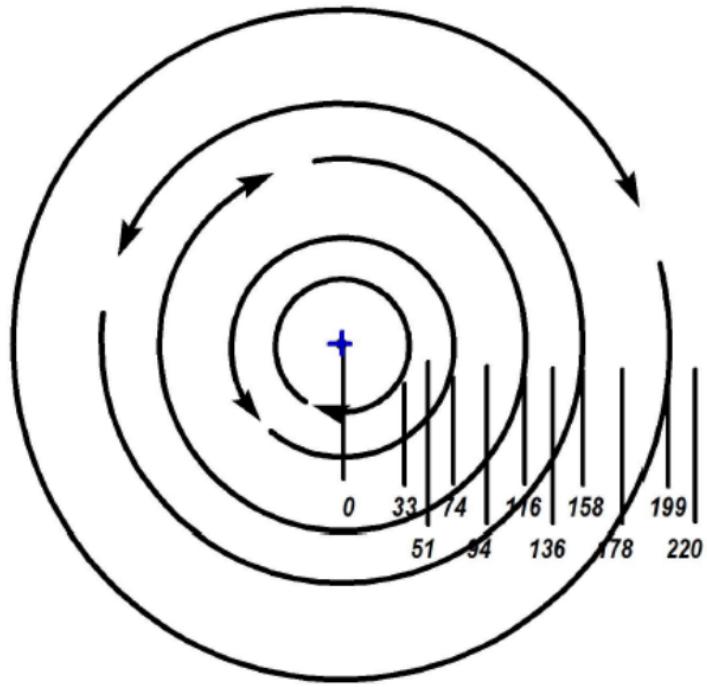
D. E. Scott.

Birkeland Currents: A Force-Free Field-Aligned Model. *Progress in Physics*, 11, 2015, p. 167–179.

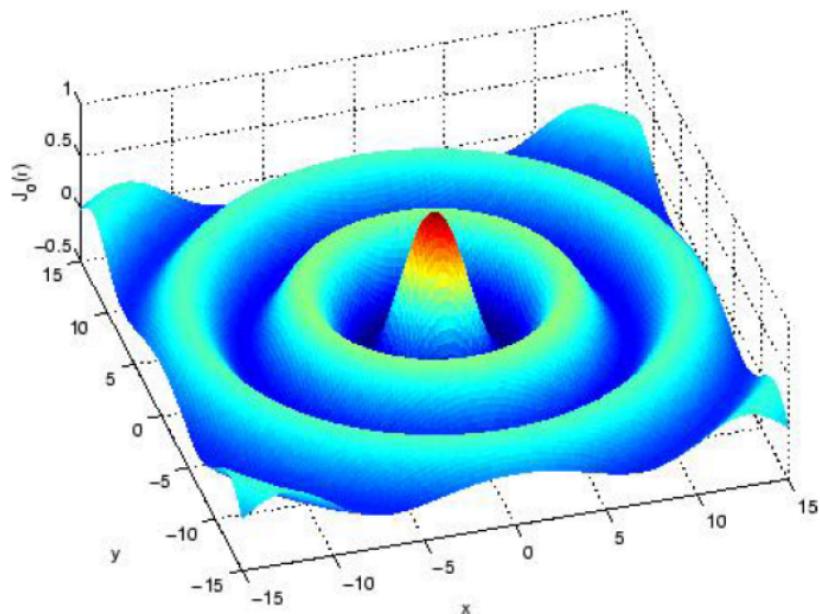
D. E. Scott.

Birkeland Currents and Dark Matter. *Progress in Physics*, 14, 2018, p. 57–62.

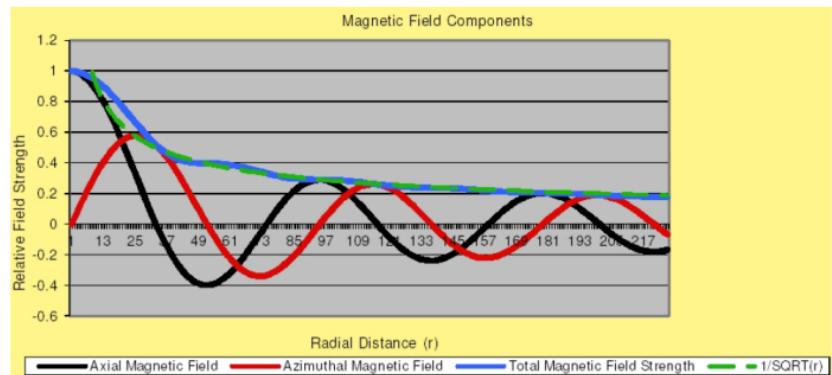
+ Jim Weninger's ideas



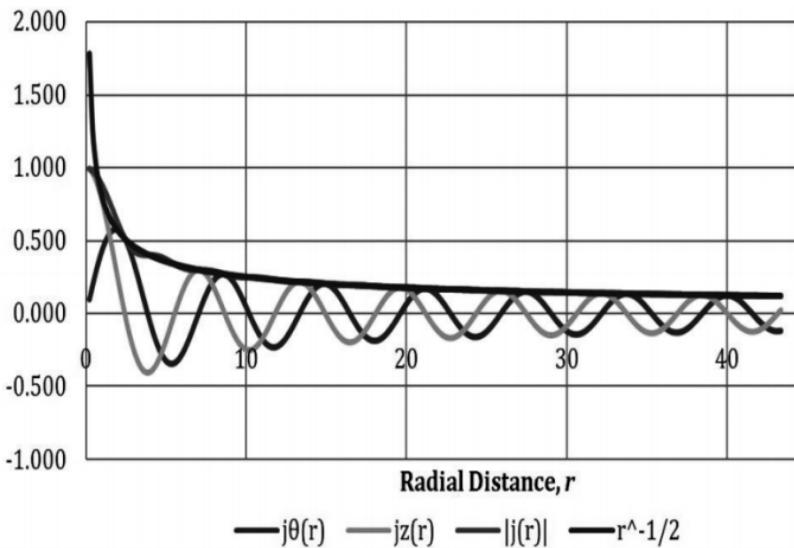
Cross-section of a force-free current.



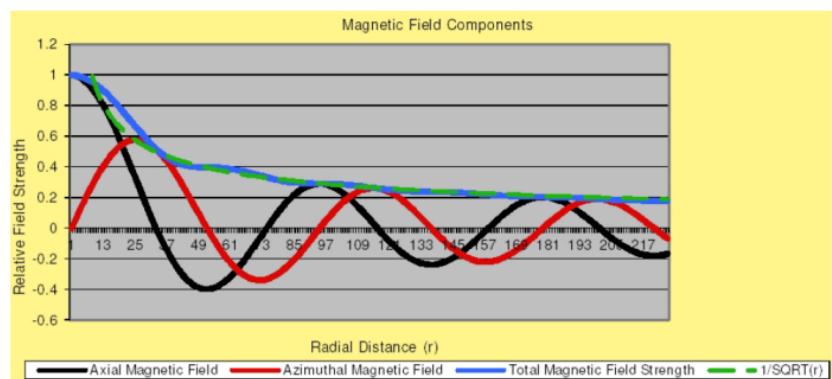
Magnitude of the axial magnetic field  
and the current density.



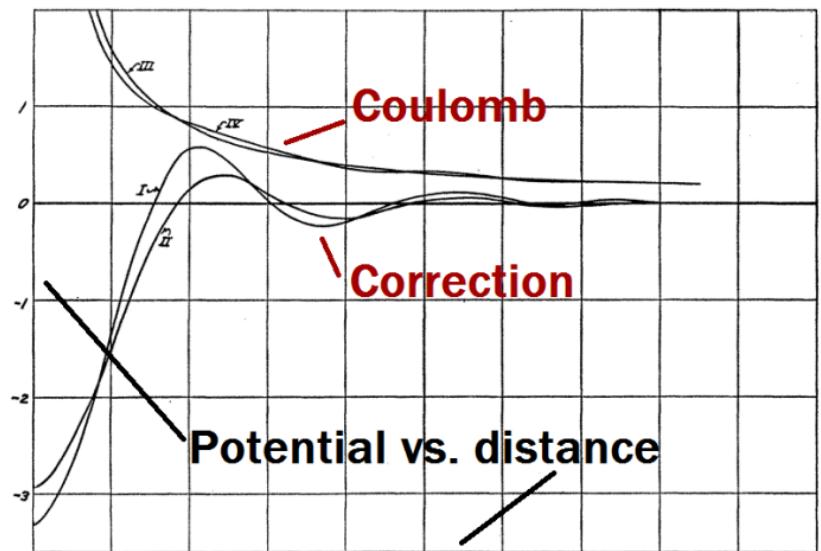
Magnetic field vs. distance from axis.



Current density vs. distance from axis.



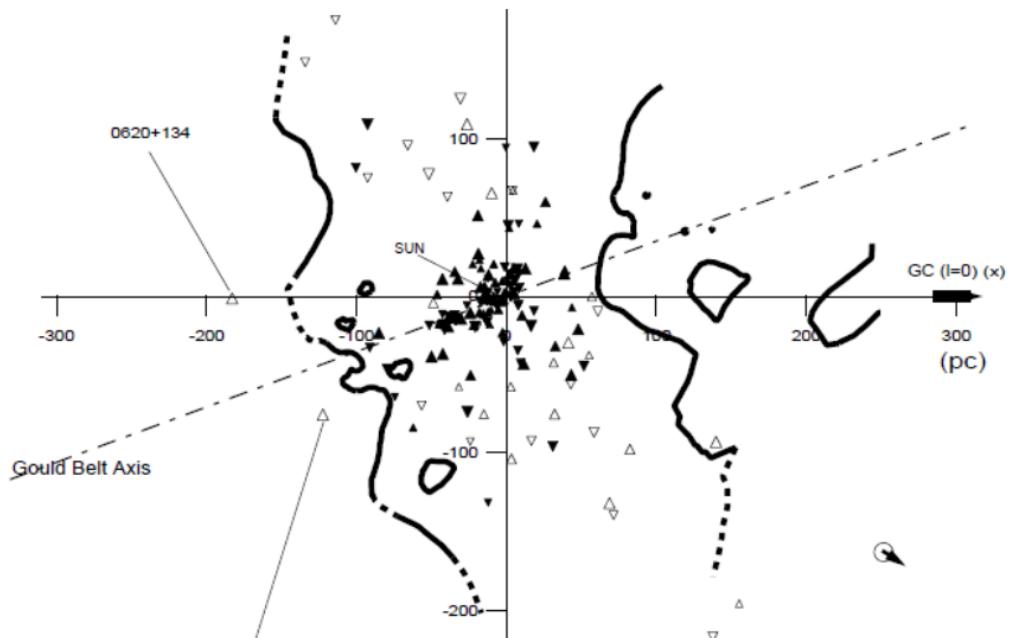
Magnetic field vs. distance from axis.



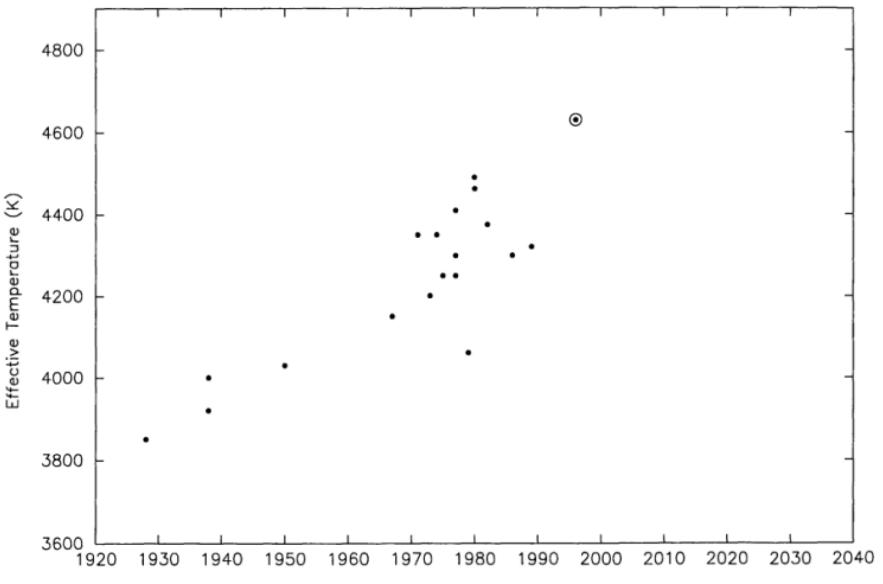
Pam padam paaaaam, pam padaam

B. Y. Welsh et al. EUV mapping of the local interstellar medium: the Local Chimney revealed? *Astronomy and Astrophysics*, 352, 1999, p. 308–316.

B. Y. Welsh, S. Sallmen, R. Lallement. Probing the inner halo and IVC gas through the Local Interstellar Chimney. 414, 2004, p. 261–274.



R. E. M. Griffin. Arcturus and human evolution. The Observatory, 116, 1996, p. 404–405.



Arcturus temperature estimates

+ Sirius reported by ancients as "red star".

Possible solution to various problems:

- Precession problem;
- Parallax measurements (e.g. Pleiades);
- Metallicity measurements (Marklund convection etc.);
- Ambiguity of red/blueshifts;
- Gould belt around the Local Chimney;
- Orbits and axial tilts of planets?
- Counter-rotation + differential rotation of atmospheres;
- The nature of "cosmic microwave background";
- Solar cycles and the barycenter (see also: [landscheidt.info](http://landscheidt.info));
- Esoteric evidence (longer cycles observed by ancients);
- Stellar flybys (Scholz's star, Barnard's star etc.).

**Philosophical comment:** cyclicity does not contradict catastrophism.

Large scale cycle might induce small scale catastrophes or energetic events (e.g. solar flares vs. sunspot cycle), but that doesn't break the cycle.

*Velikovsky*<sup>2</sup> – not only celestial catastrophes, but cycles on top of them.

*But where are these currents?*

A strictly force-free filament does not emit any synchrotron radiation, because the current density and the magnetic field vectors are parallel in each point. Faraday rotation cancels out → only weak background fields are visible.

A more general point: is it even possible to measure large scale electromagnetic phenomena?

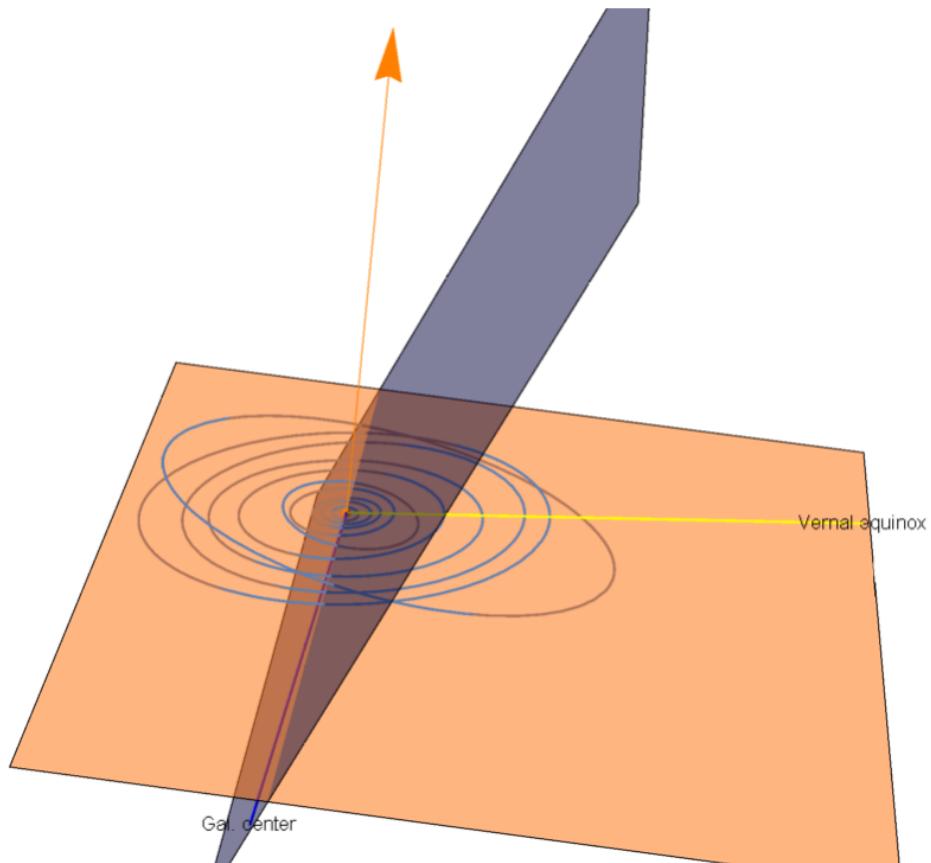
Space tether experiments – ?

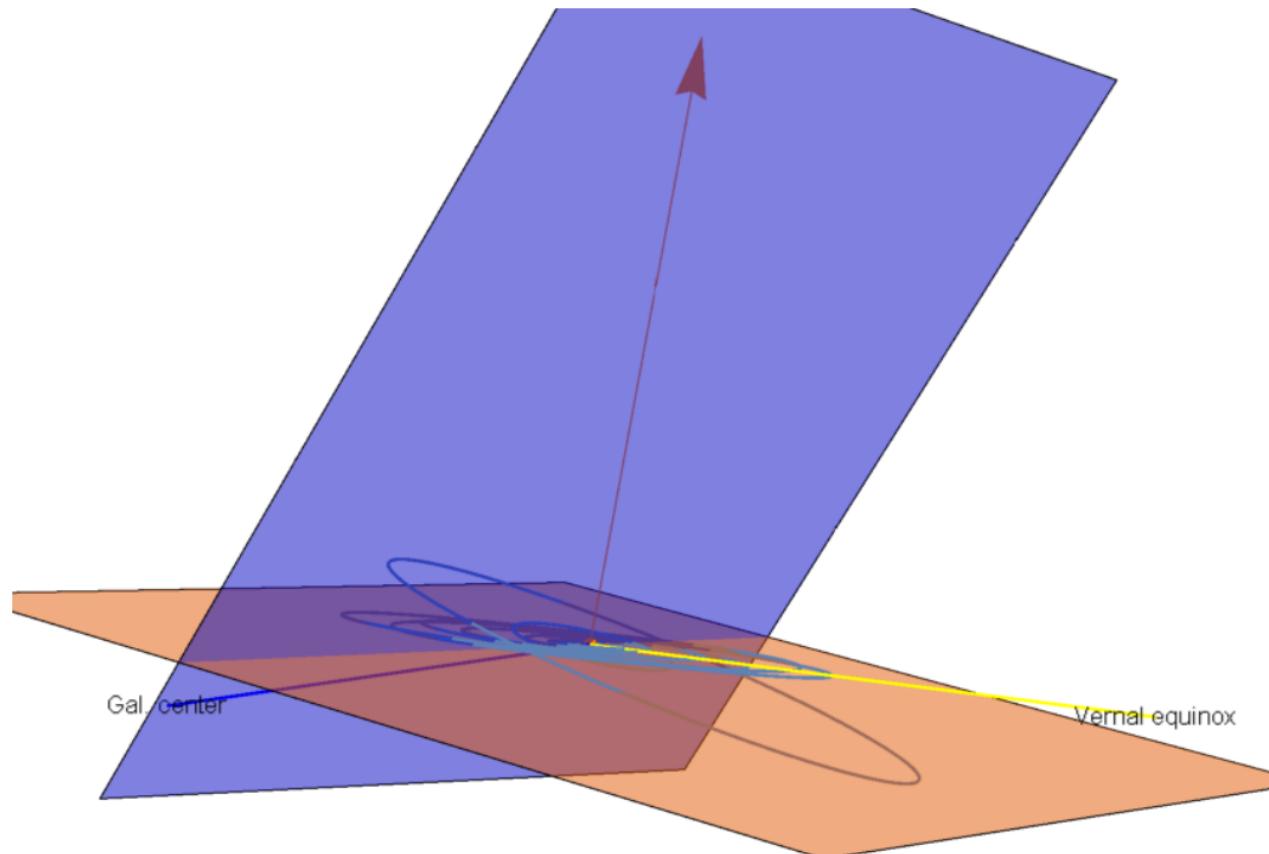
## Possible further development of the hypothesis:

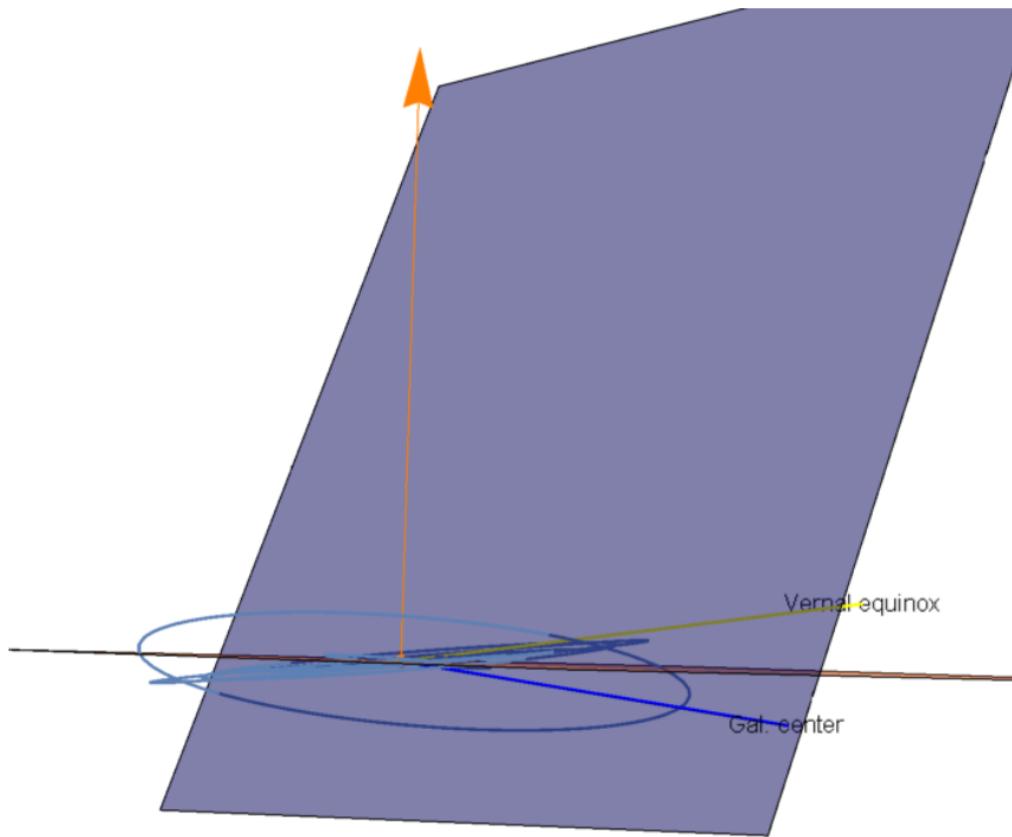
*Observational part:* mapping of the structures in our vicinity, their relation to the objects in the Solar System etc.

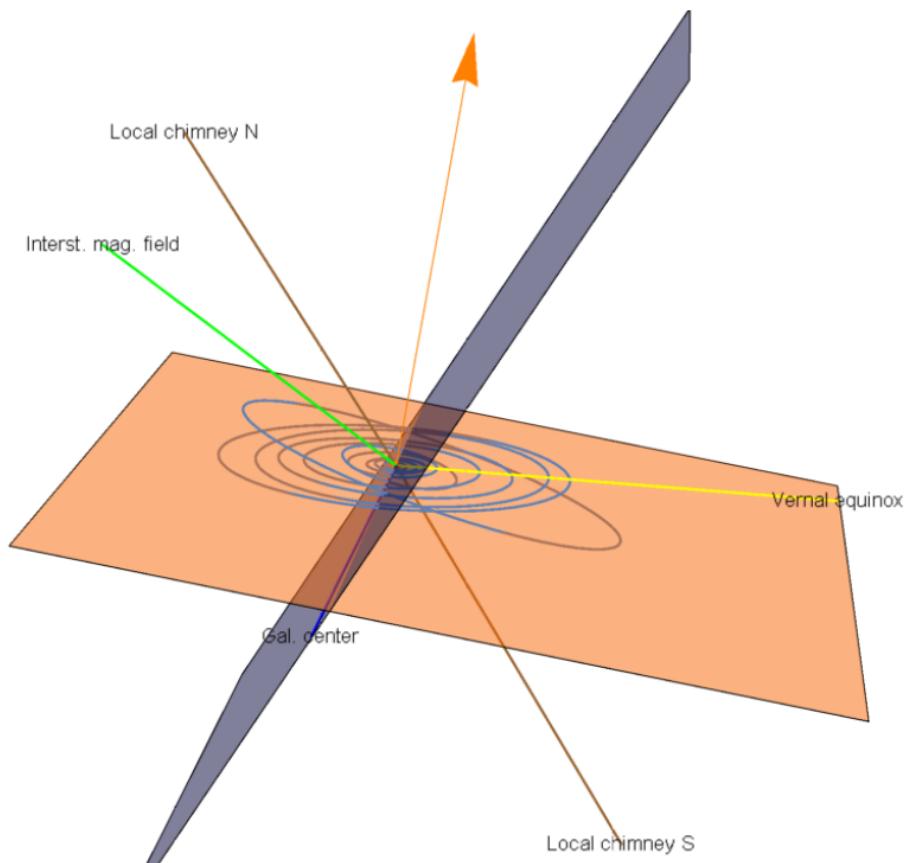
Compare, make corrections etc.

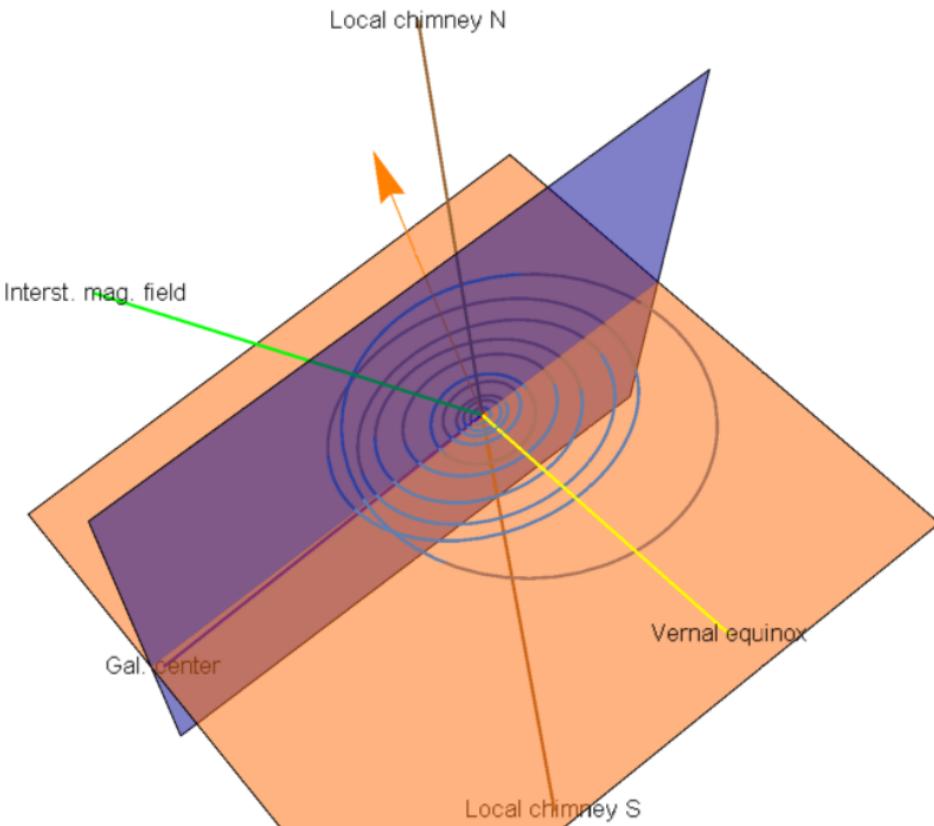
*Theoretical part:* developing a model for the interaction of Birkeland currents (two or more) and see what kind of structures would arise.

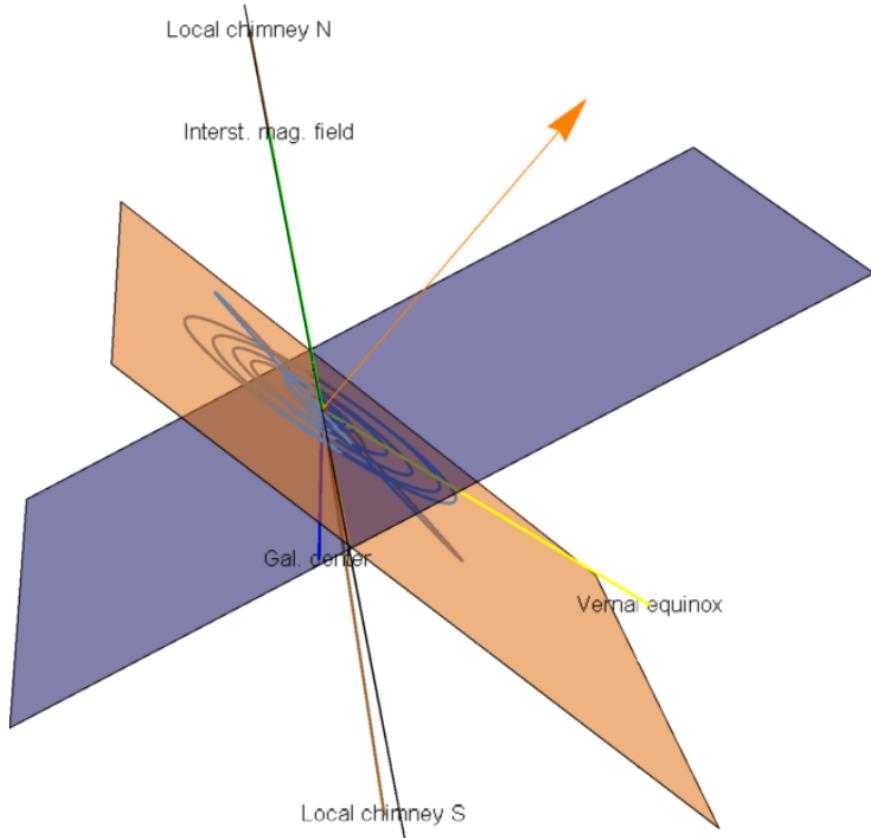


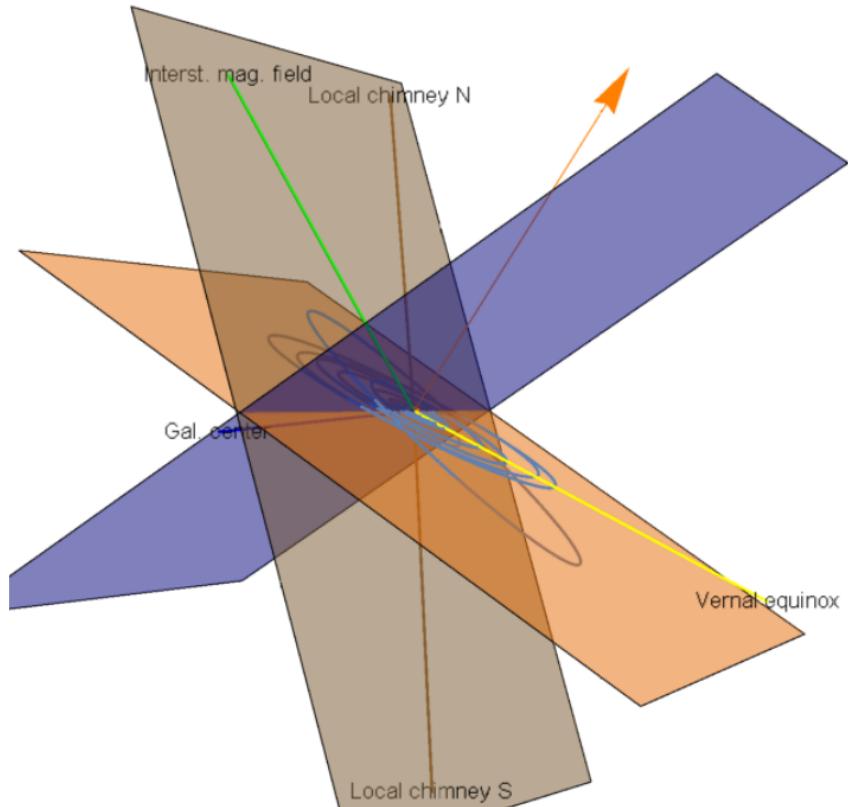


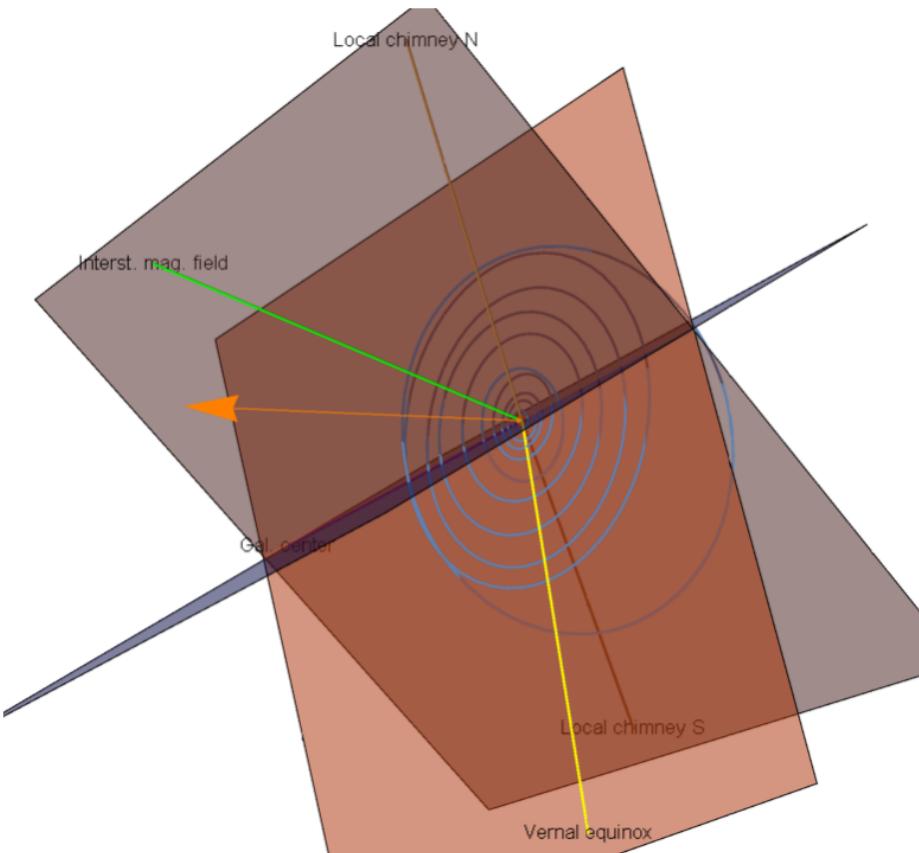


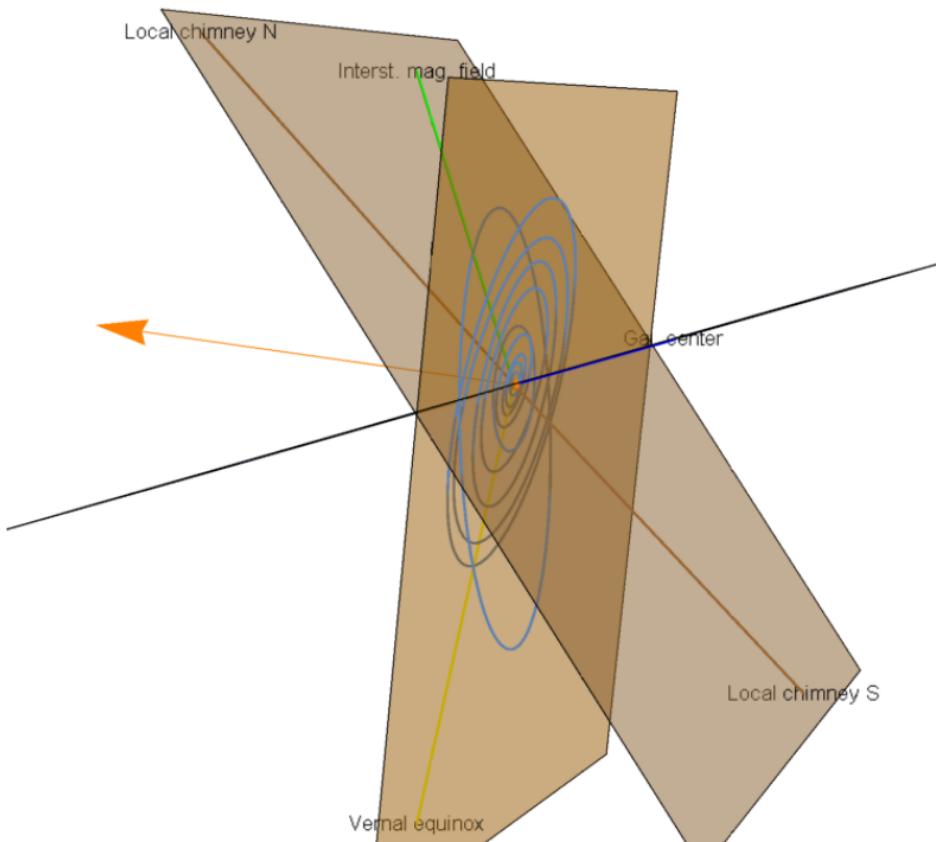








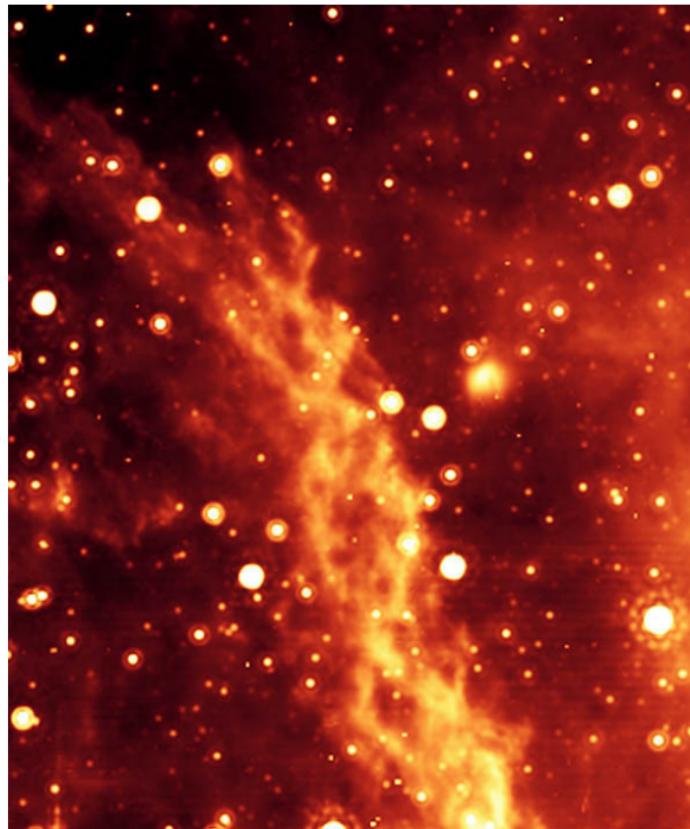




Is it something unique? Doesn't seem so.

N. M. McClure-Griffiths et al. Evidence for Chimney Breakout in the Galactic Supershell GSH 242–03+37. *The Astrophysical Journal*, 638, 2006, p. 196–205.

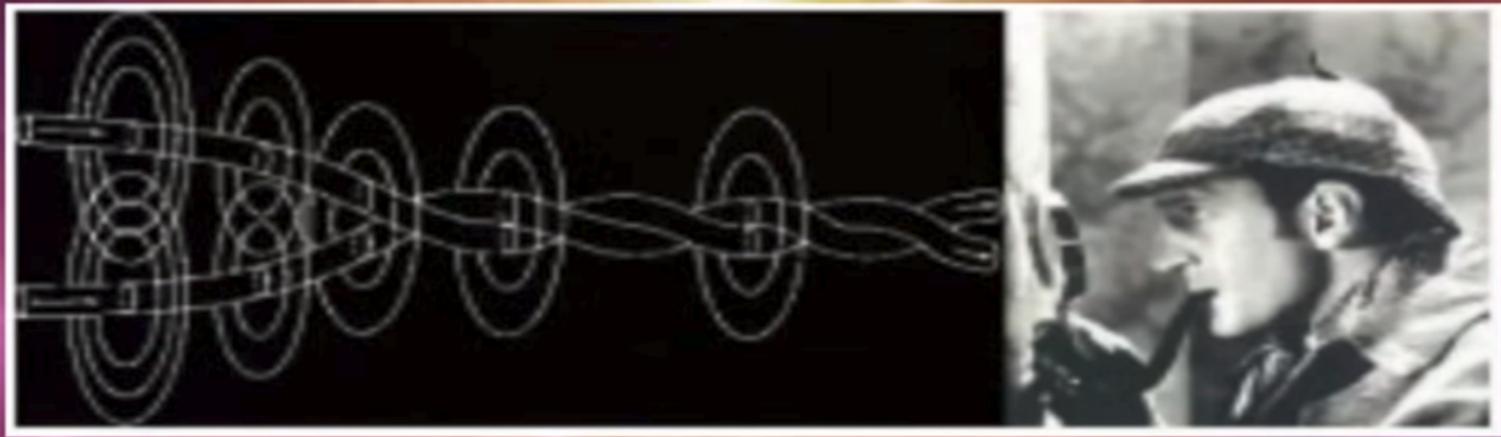
More chimneys about 10 klyr away.



M. R. Morris, K. I. Uchida, T. Do.  
The Double Helix Nebula: A Torsional  
Wave Propagating Along the Galactic  
Center Magnetic Field? Bulletin of the  
American Astronomical Society, 37,  
2005, p. 1332.

"... its axis is oriented perpendicular to  
the Galactic plane."  
"... possibly part of a larger structure."

*"It's Filamentary my Dear Watson."*



by: soupdragon42 (YouTube); thanks to Robert Hawthorne.



## The Electric View

925 подписчиков

ВЫ ПОДПИСАНЫ 925



\*Could be renamed to Electric Edge (at least I hope it would)



jody mondor 1 месяц назад

So funny when he says...".Oumuamua". Like somebody's grandmother trying to kiss you.



1



ОТВЕТИТЬ

Скрыть ответы ^



paladin17t 1 месяц назад

Or a zombie eating your brain.



1

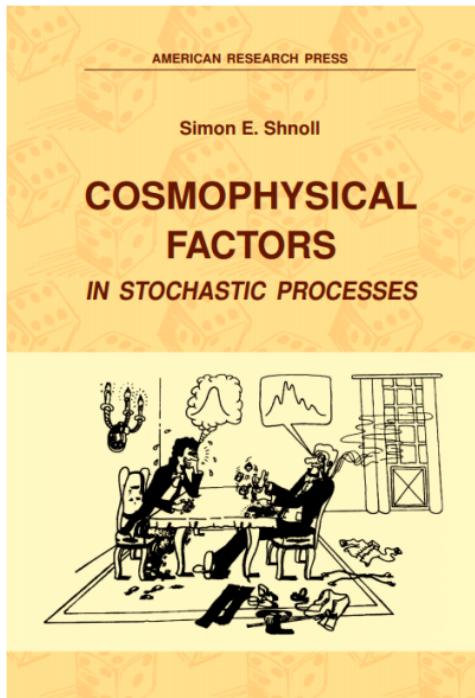


ОТВЕТИТЬ



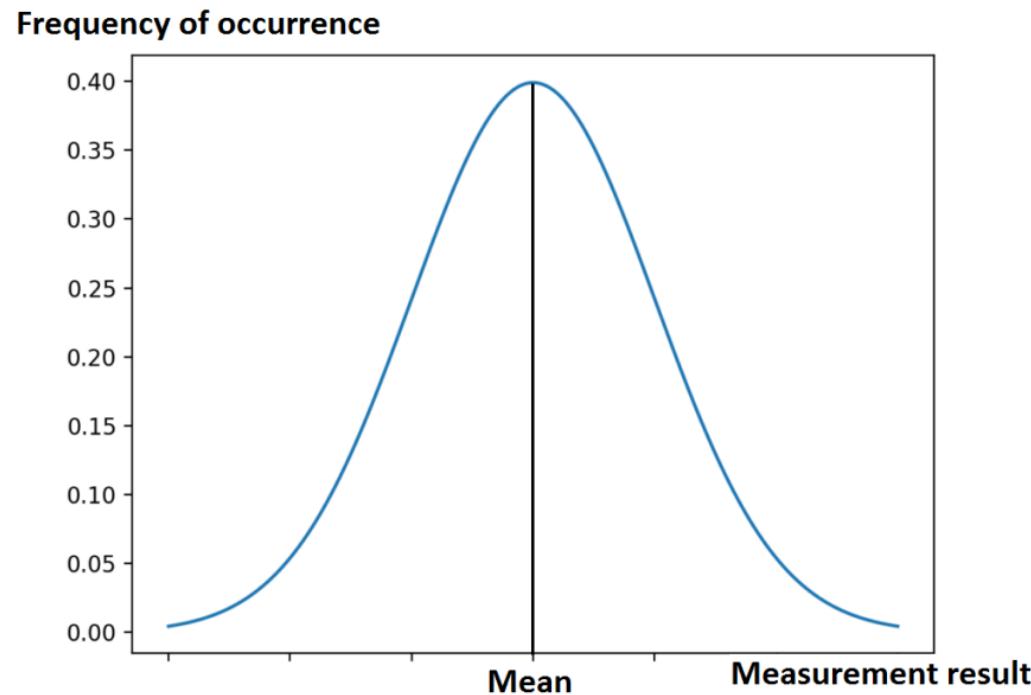
jody mondor 1 месяц назад (изменено)

@paladin17t his buddy Jean weninger looks like a zombie and they have skeletons for their picture for the electric view. Coinkydink?

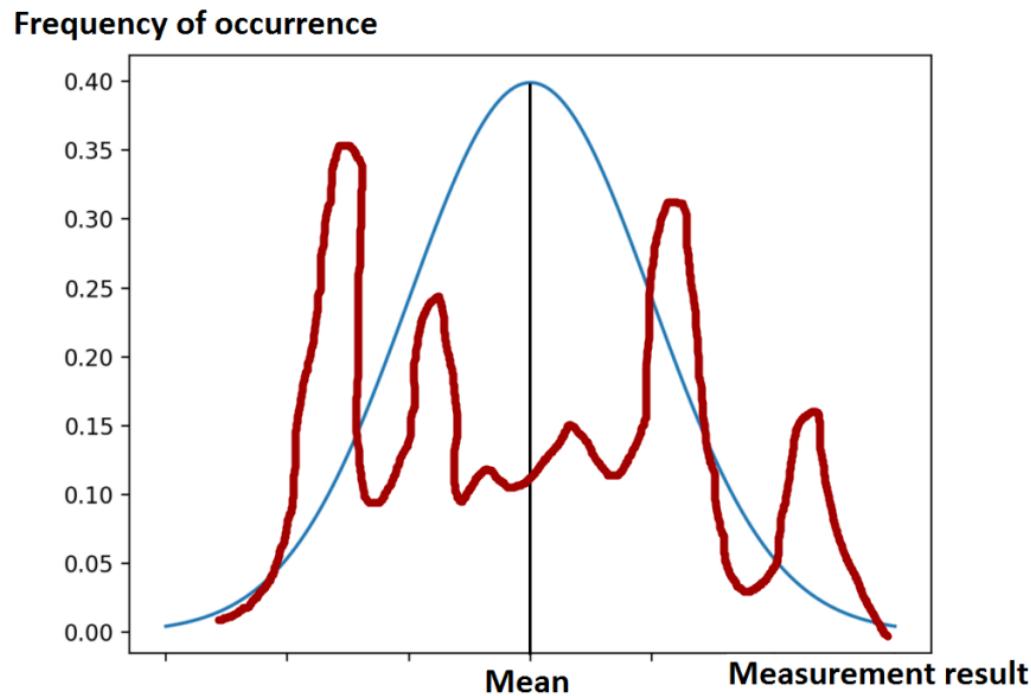


S. E. Shnoll. *Cosmophysical Factors in Stochastic Processes*. American Research Press, Rehoboth, NM, USA, 2012.

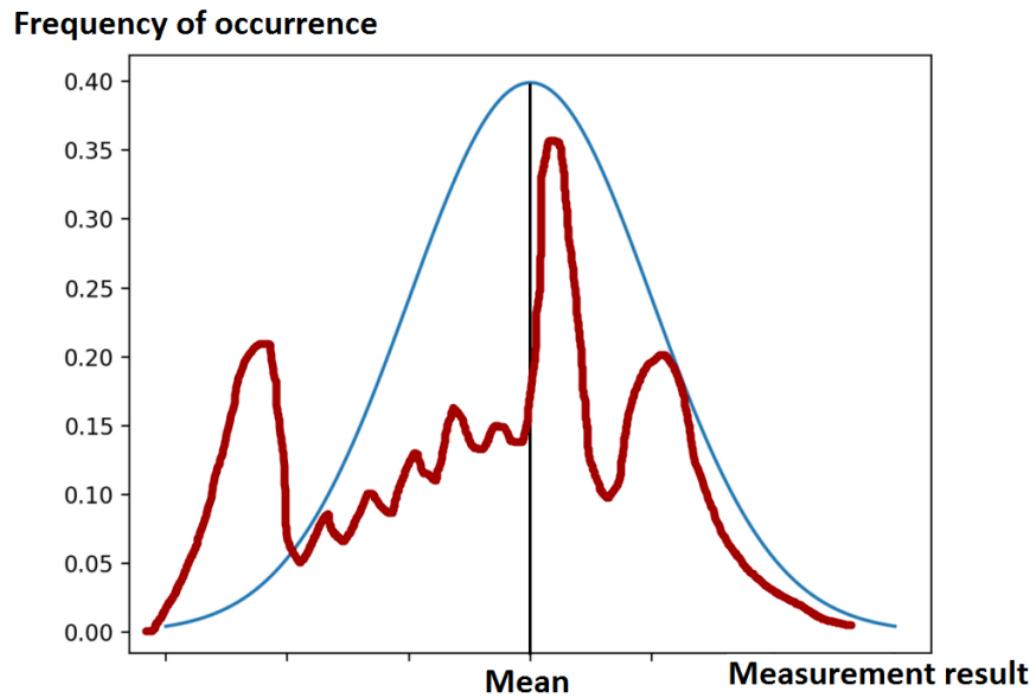
*Shnoll effect:* dependence of the fine structure of statistics of random processes on time (of day, year etc.).



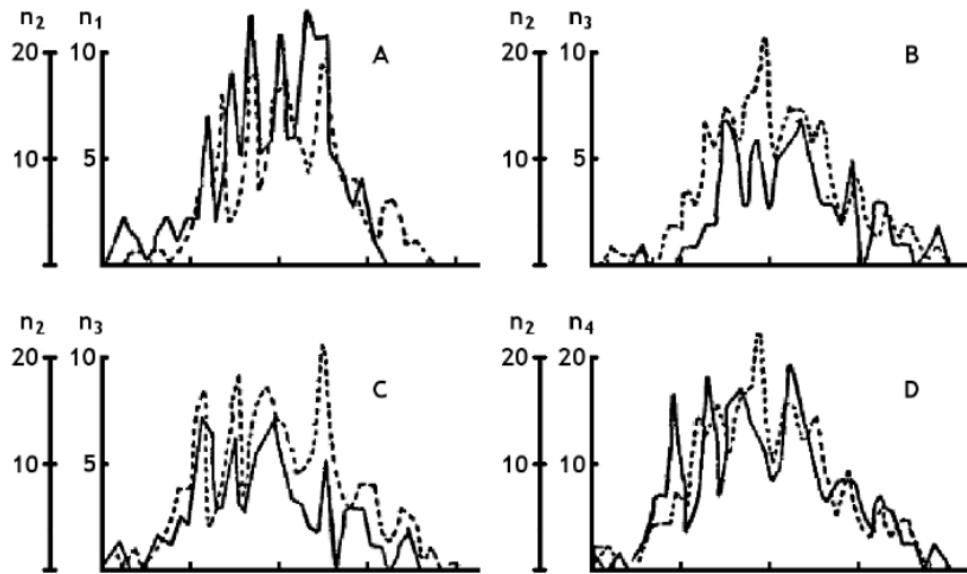
*Shnoll effect:* dependence of the fine structure of statistics of random processes on time (of day, year etc.).



*Shnoll effect:* dependence of the fine structure of statistics of random processes on time (of day, year etc.).



*All kinds of random processes and noises demonstrate this dependence.*



- a) discharge latency in a neon-lamp RC generator and electrophoretic mobility of latex particles;
- b) the time of a "cross-section" relaxation of protons of T2 water and beta activity  $^{14}\text{C}$ ;
- c) the time of a "cross-section" relaxation of protons of T2 water and electrophoretic mobility of latex particles;
- d) electrophoretic mobility of latex particles and beta activity  $^{14}\text{C}$ .

Some periods identified by Shnoll:

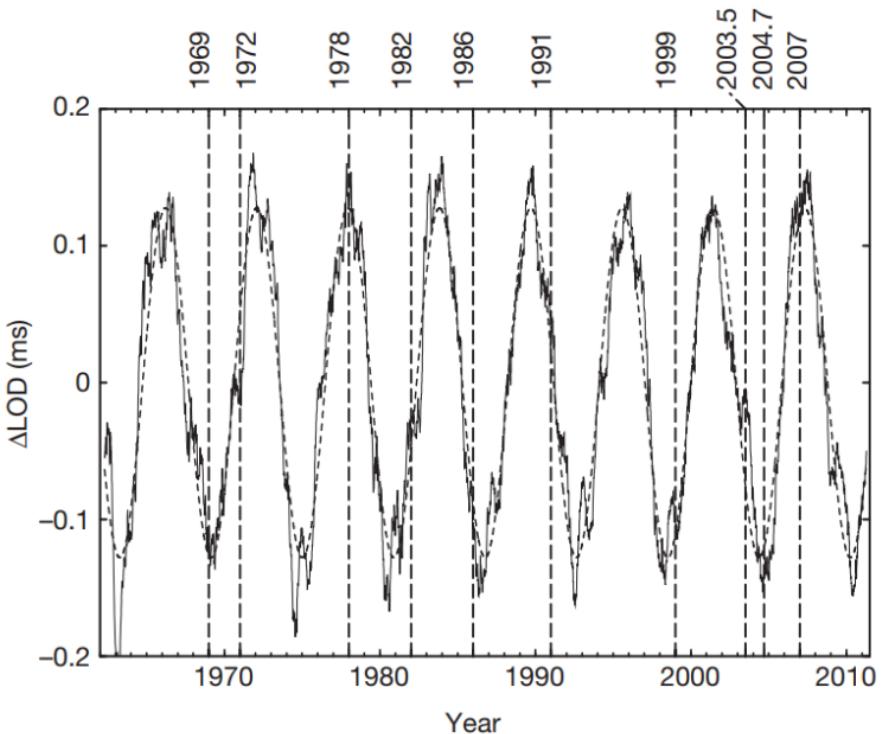
- 23 hours, 56 min = 1436 min (stellar day);
- 24 hours = 1440 min (solar day);
- 24 hours, 50 min = 1490 min (lunar day);
- 27 days, 7 hours, 43 min = 39 343 min (lunar month);
- 31 days, 19 hours, 29 min = 45 809 min (lunar evection);
- 365 days = 525 600 min (calendar year);
- 365 days, 6 hours, 9 min = 525 969 min (stellar year);
- 720 min (half of the calendar/solar day);
- 182 days, 12 hours = 262 800 min (half of the calendar/solar year);

Some periods identified by Shnoll:

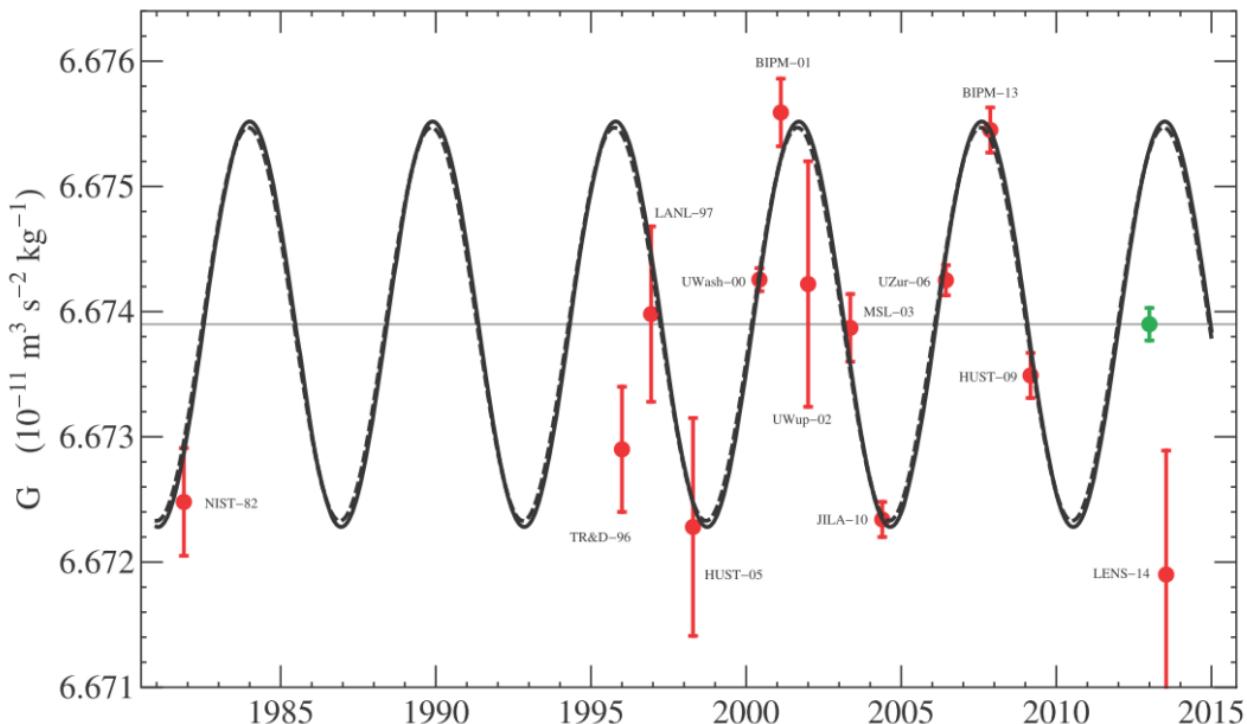
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- 720 min (half of the calendar/solar day);
- 182 days, 12 hours = 262 800 min (half of the calendar/solar year);

New astrology?

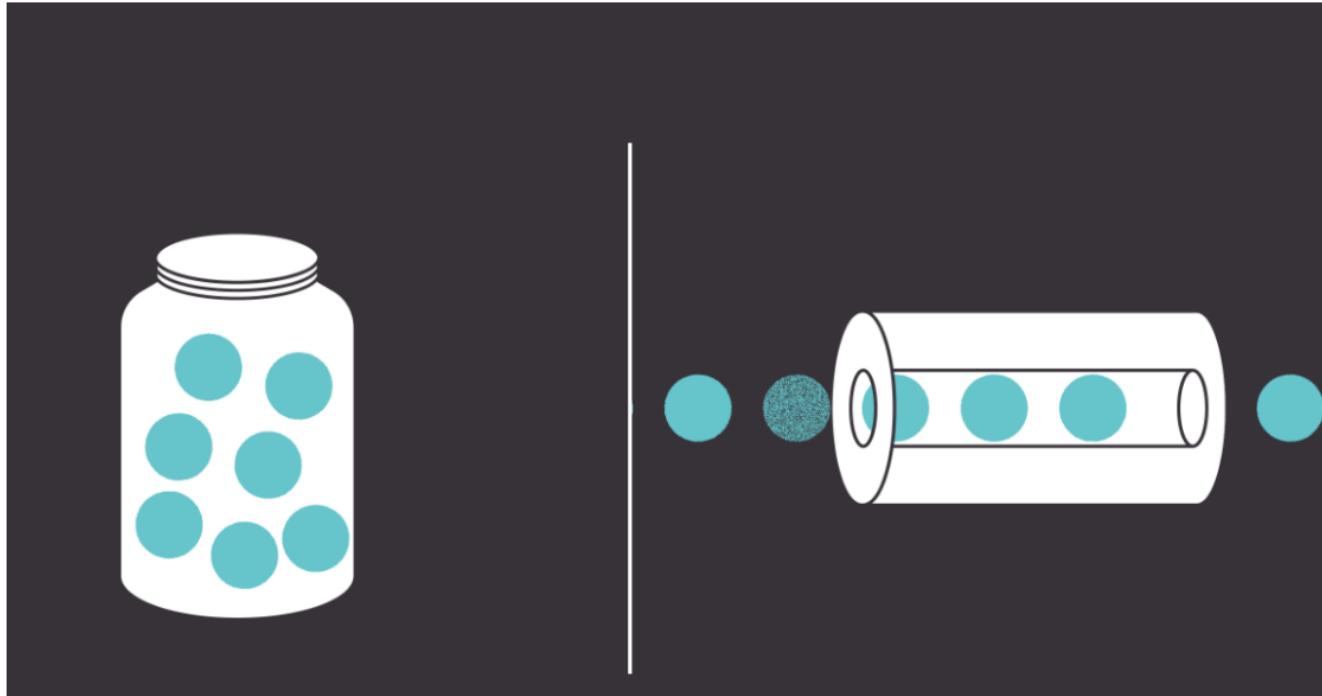
R. Holme, O. de Viron. Characterization and implications of intradecadal variations in length of day. Nature, 499, 2013, p. 202–205.



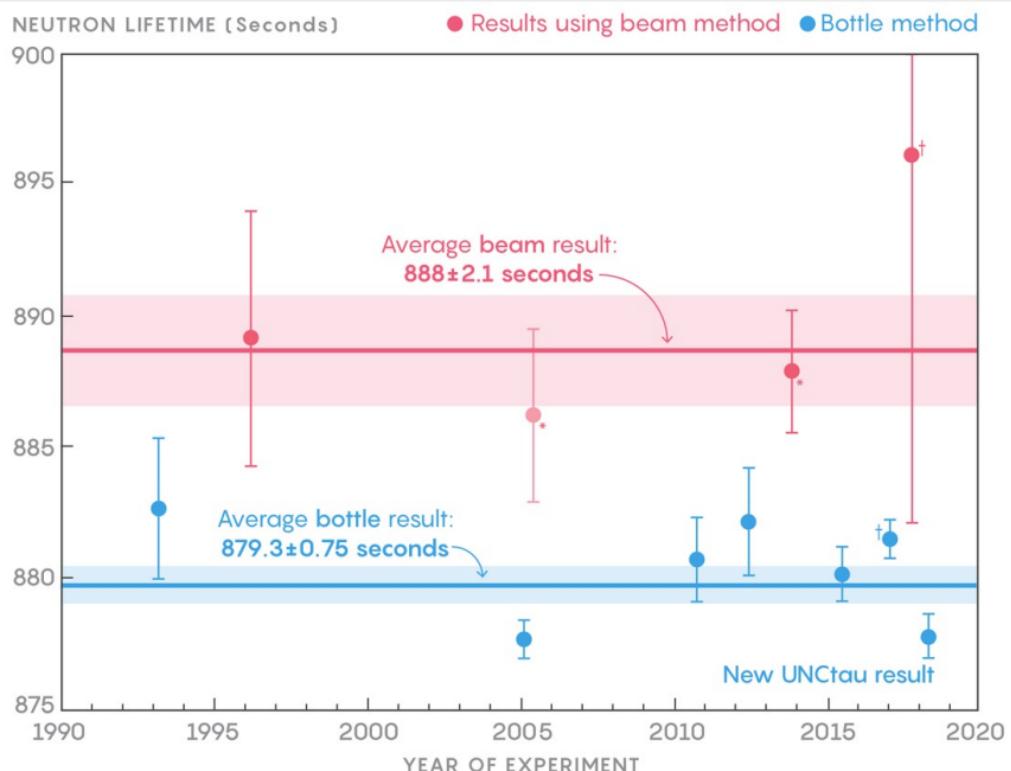
J. D. Anderson et al. Measurements of Newton's gravitational constant and the length of day. *Europhysics Letters*, 110, 2015, 10002.



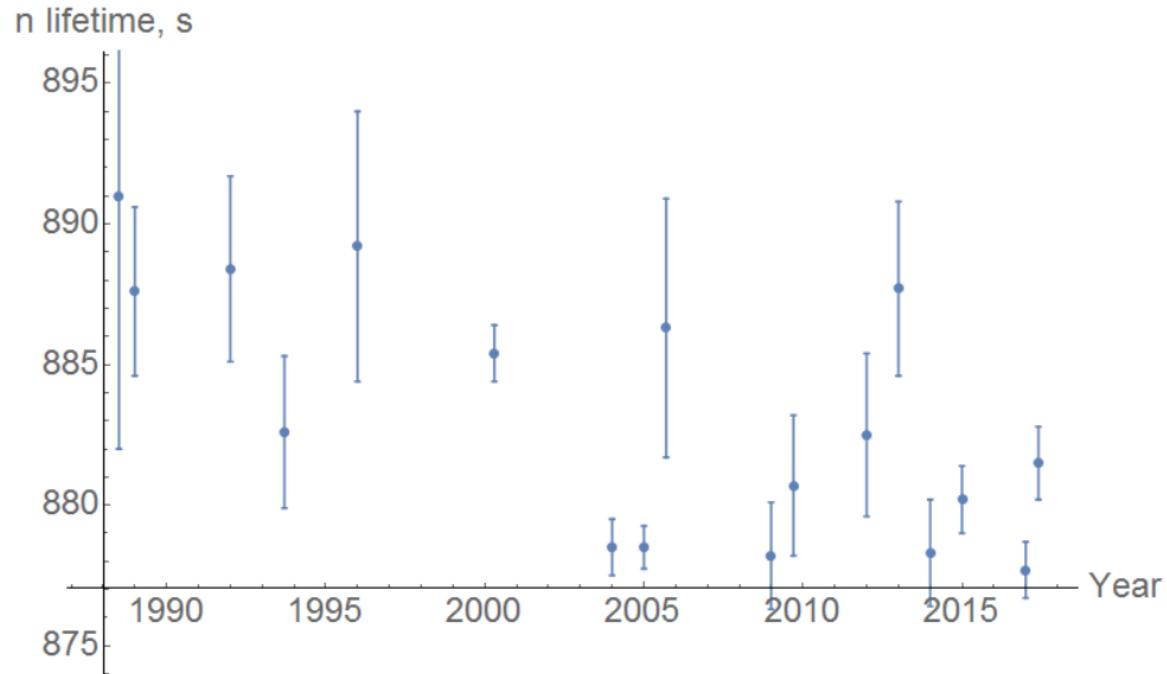
"5.9 year periodic signal in LOD has previously been interpreted as due to fluid core motions and inner-core coupling. We report the G/LOD correlation ... Least unlikely, perhaps, are currents in the Earth's fluid core that change both ... LOD and the circumstances in which the Earth-based experiments measure G. In this case, there might be correlations with terrestrial magnetic field measurements."



Bottle and beam methods of neutron lifetime measurement  
(quantamagazine.org).

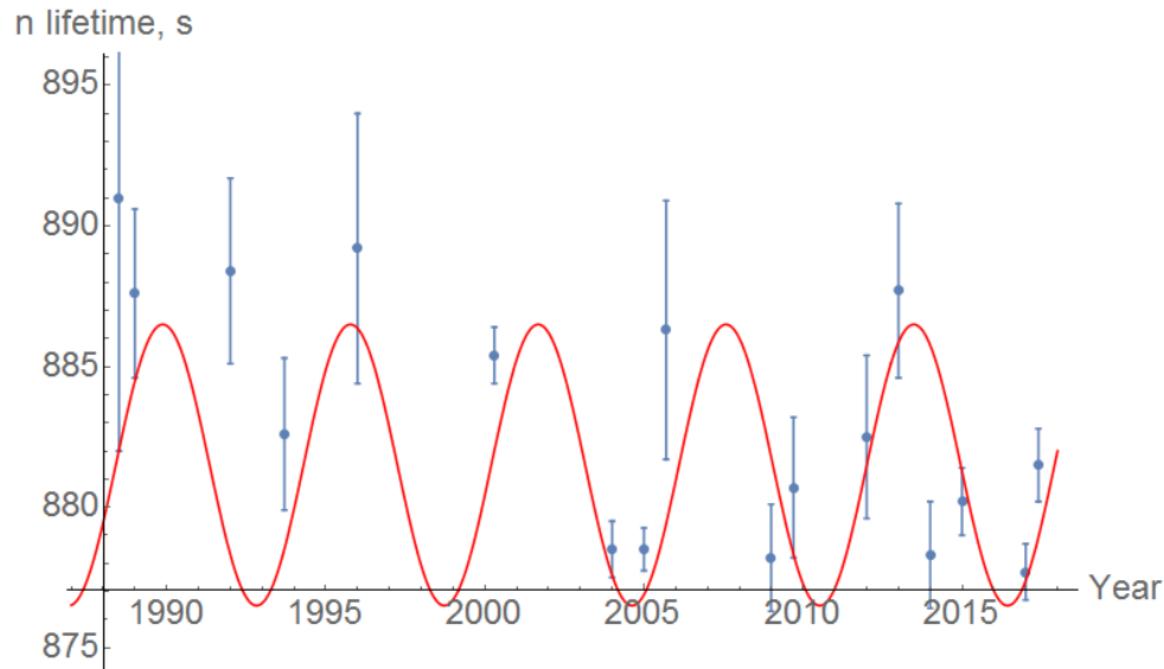


Bottle and beam methods of neutron lifetime measurement  
(quantamagazine.org).



F. E. Wietfeldt, G. L. Greene. Colloquium: The neutron lifetime. *Reviews of Modern Physics*, 83, 2011, p. 1173–1192.

A. P. Serebrov et al. Neutron lifetime measurements with the big gravitational trap for ultracold neutrons. *Phys. Rev. C*, 97, 2018, 055503.

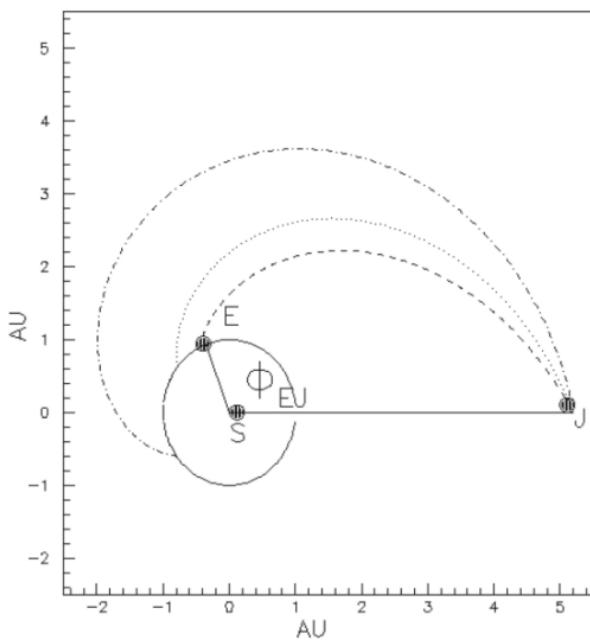


E. Bagashov. Electromagnetic Phenomena: From Micro to Macro. OTF2019 presentation (Albuquerque, Feb. 17, 2019).

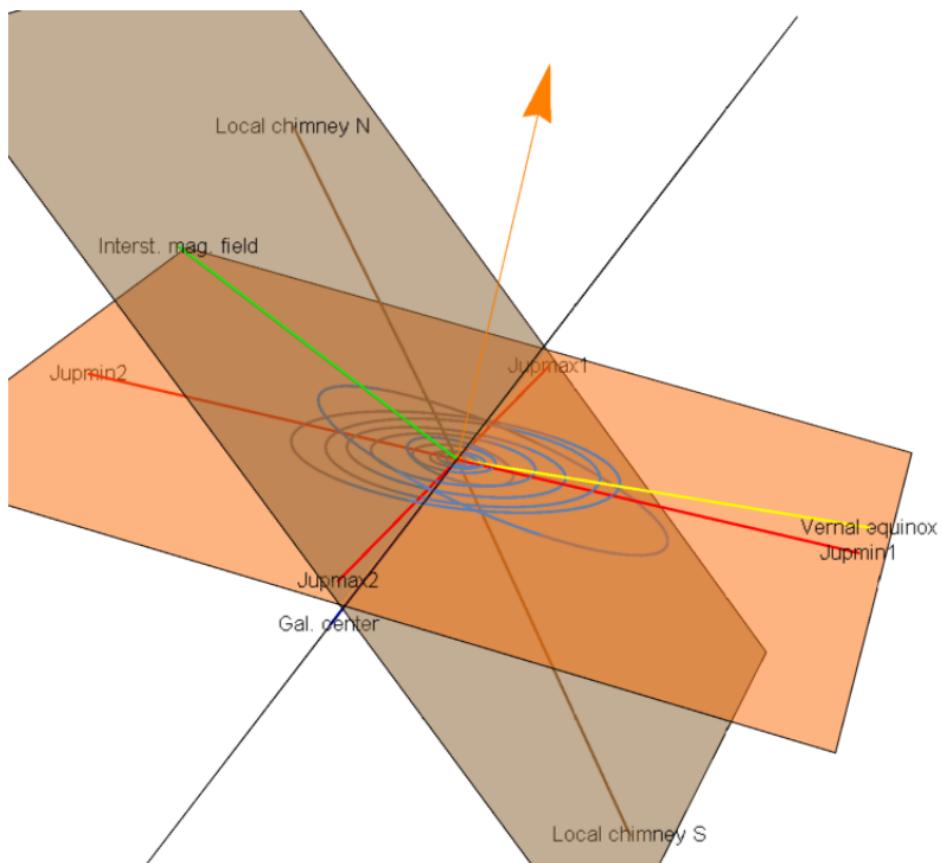
F. E. Wietfeldt, G. L. Greene. Colloquium: The neutron lifetime. *Reviews of Modern Physics*, 83, 2011, p. 1173–1192.

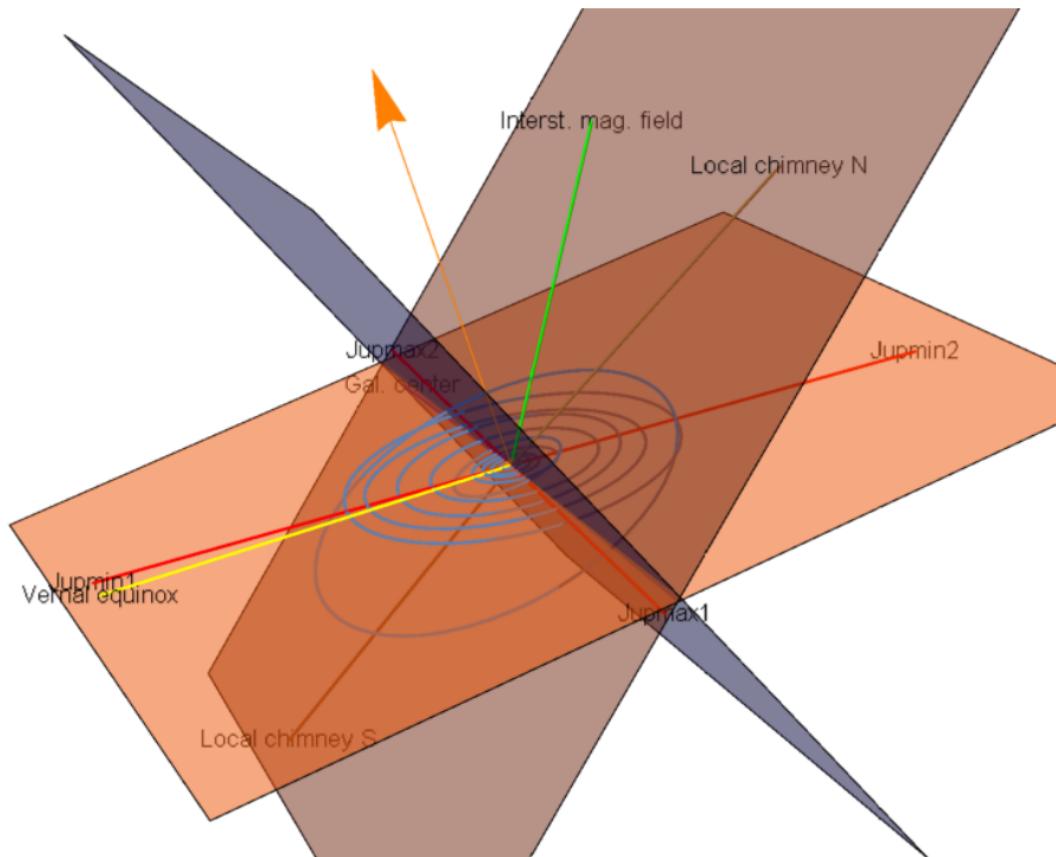
A. P. Serebrov et al. Neutron lifetime measurements with the big gravitational trap for ultracold neutrons. *Phys. Rev. C*, 97, 2018, 055503.

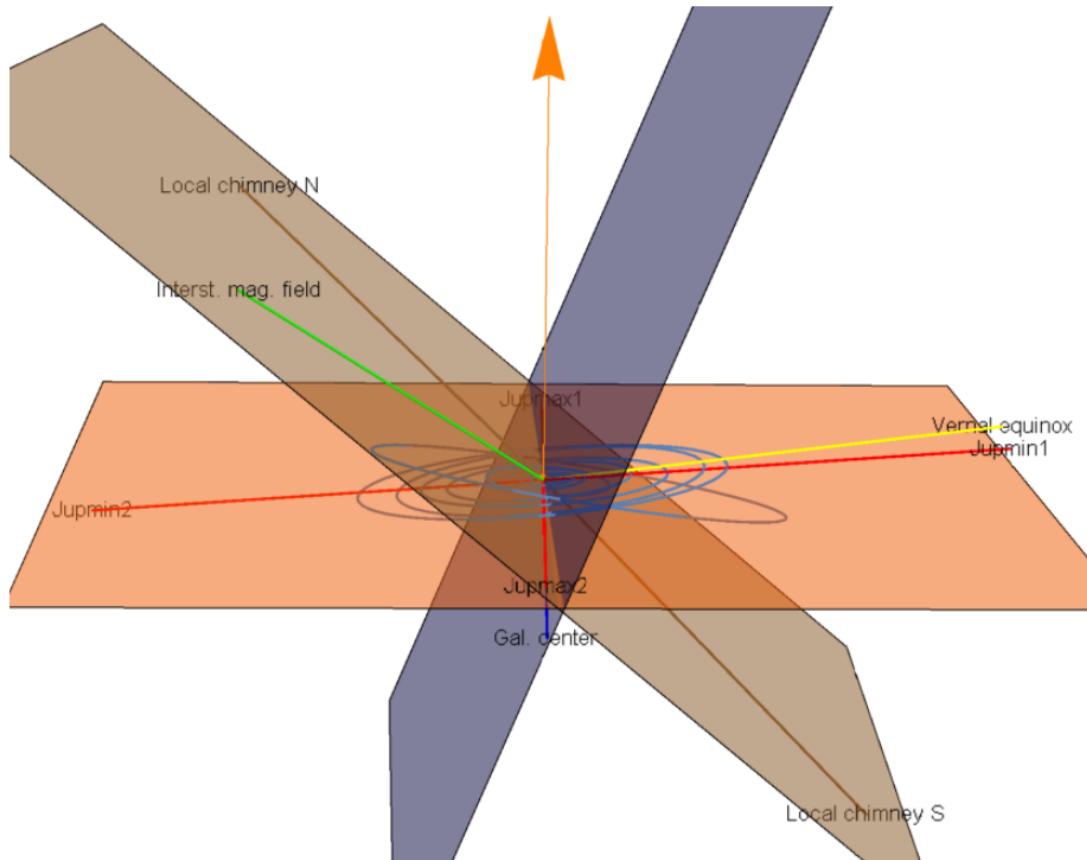
G. Pizzella. Emission of cosmic rays from Jupiter. Magnetospheres as Sources of Cosmic Rays. The European Physical Journal C, 2018, 78:848.

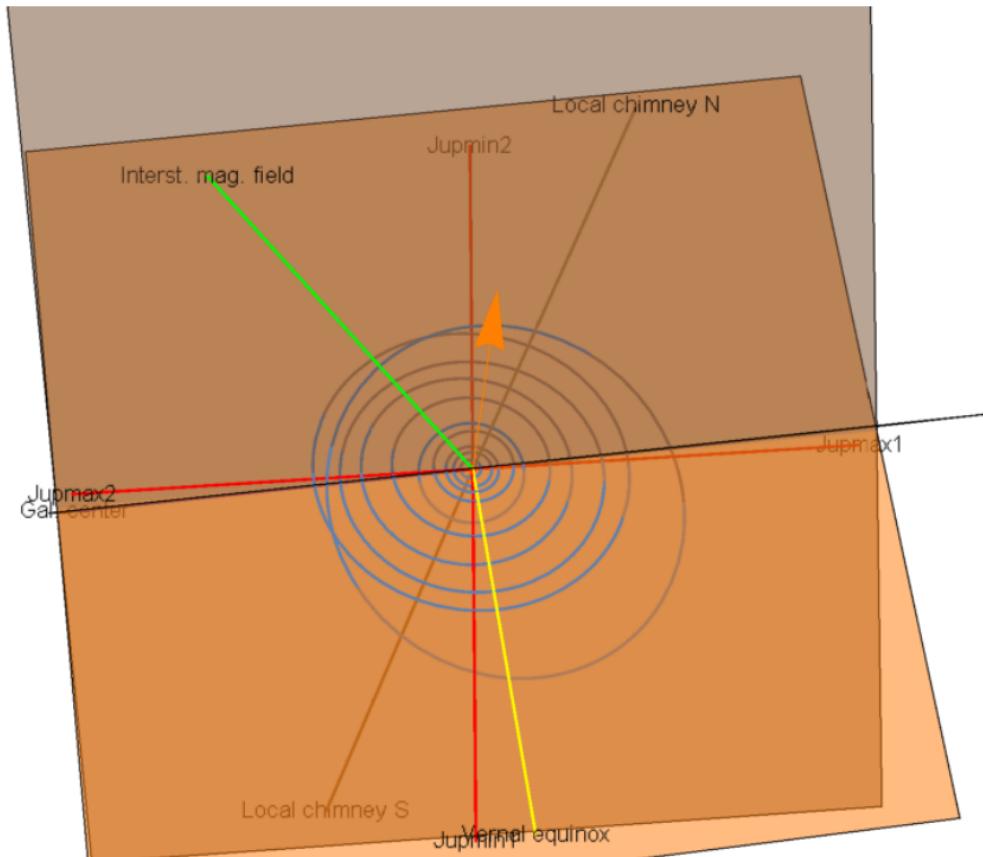


5.9 years – half the orbital period of Jupiter.

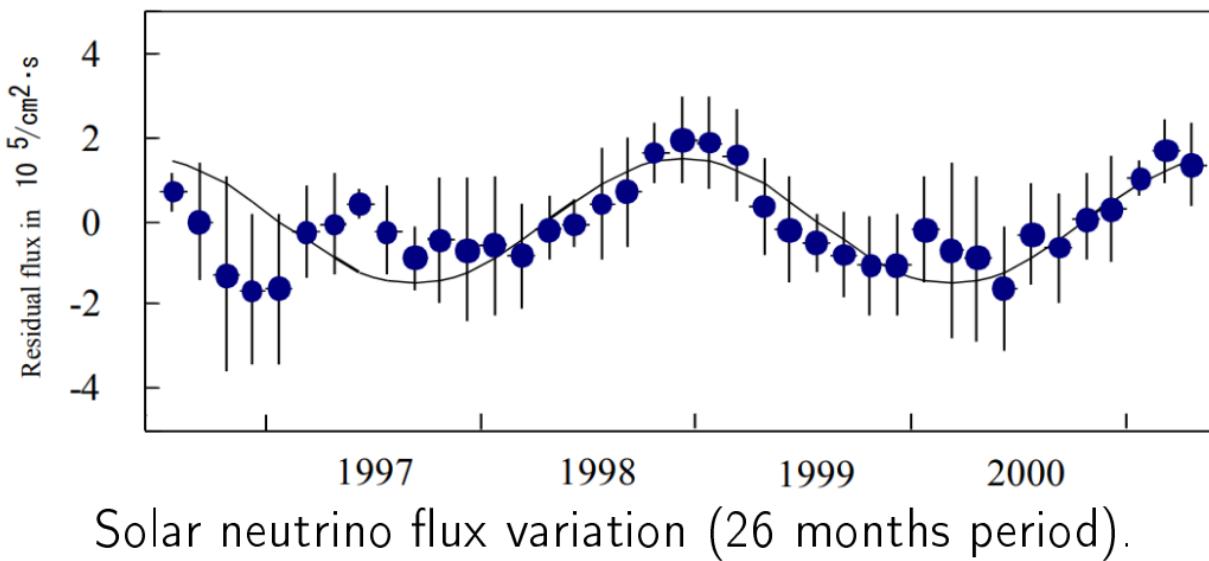




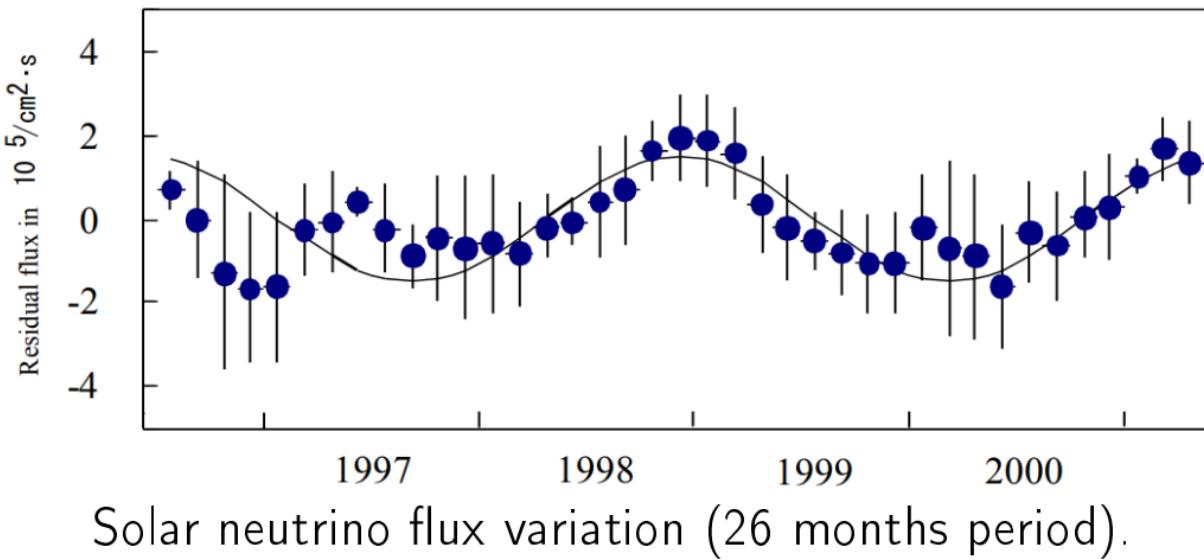




K. Sakurai, H. J. Haubold, T. Shirai. The Variation of the Solar Neutrino Fluxes over Time in the Homestake, GALLEX (GNO) and Super-Kamiokande Experiments. Space Radiation, 5, 2008, p. 207–216.

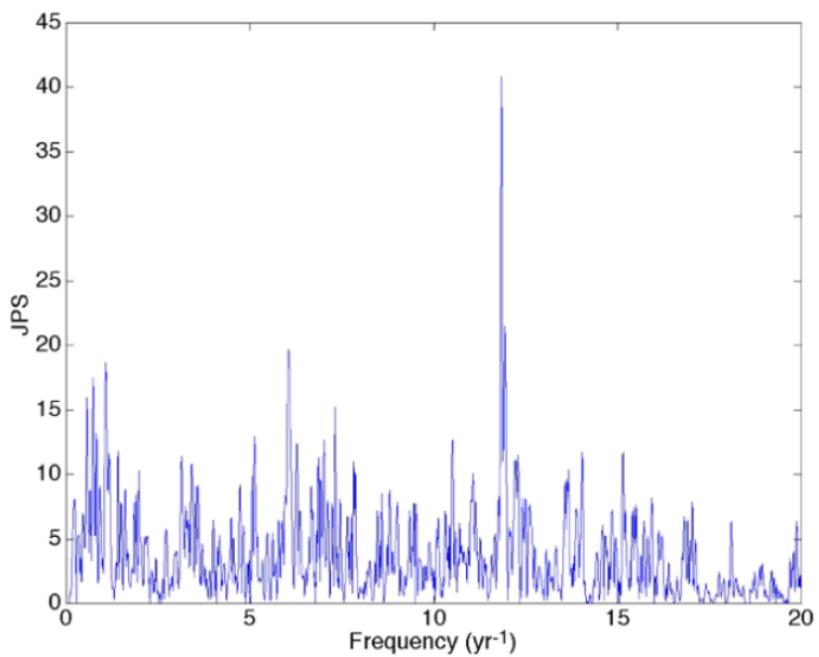


"... we have no theoretical reasoning to resolve this mysterious ... quasi-biennial periodicity ... of the fluxes of solar neutrinos".



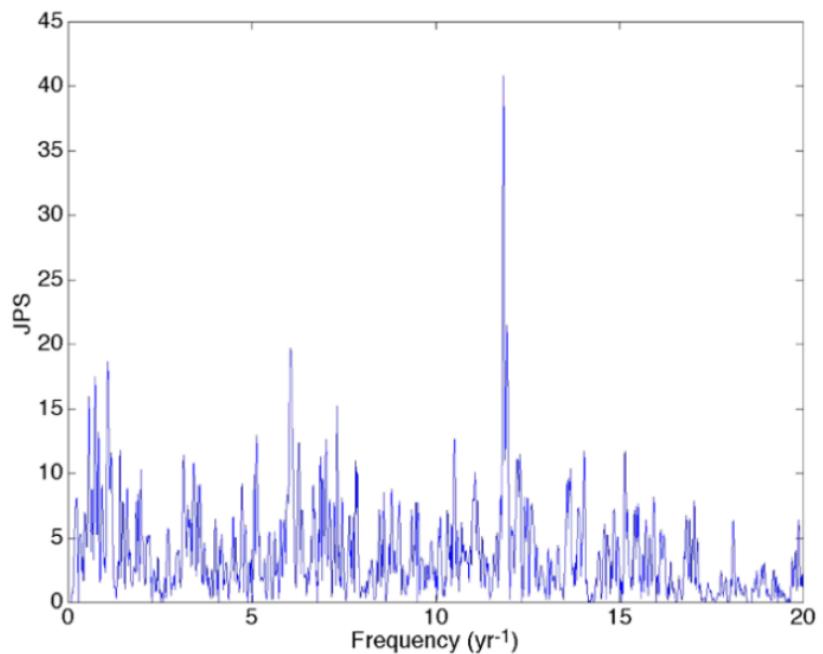
Mars synodic period? (26 months).

P. A. Sturrock. Combined Analysis of Solar Neutrino and Solar Irradiance Data: Further Evidence for Variability of the Solar Neutrino Flux and Its Implications Concerning the Solar Core. *Solar Physics*, 254, 2009, p. 227–239.



Frequency ( $\text{year}^{-1}$ )	Power
11.85	40.87
11.93	21.34
6.04	19.25
1.08	18.64
0.74	17.56
0.57	15.61
7.32	14.81
0.82	13.41
7.02	13.21
5.13	13.11

"... suggesting that there may be a second, inner tachocline separating the core from the radiative zone ... there may be an inner dynamo that could produce a strong internal magnetic field and a second solar cycle."



Frequency (year <sup>-1</sup> )	Power
11.85	40.87
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6.04	19.25
1.08	18.64
0.74	17.56
0.57	15.61
7.32	14.81
0.82	13.41
7.02	13.21
5.13	13.11

There *is* variability of decay rates:

- J. H. Jenkins et al. Evidence of correlations between nuclear decay rates and Earth–Sun distance. *Astroparticle Physics*, 32, 2009, p. 42–46;
- P. A. Sturrock, E. Fischbach, J. D. Scargle. Comparative Analyses of Brookhaven National Laboratory Nuclear Decay Measurements and Super-Kamiokande Solar Neutrino Measurements: Neutrinos and Neutrino-Induced Beta-Decays as Probes of the Deep Solar Interior. *Solar Physics*, 291, 2016, p. 3467–3484.

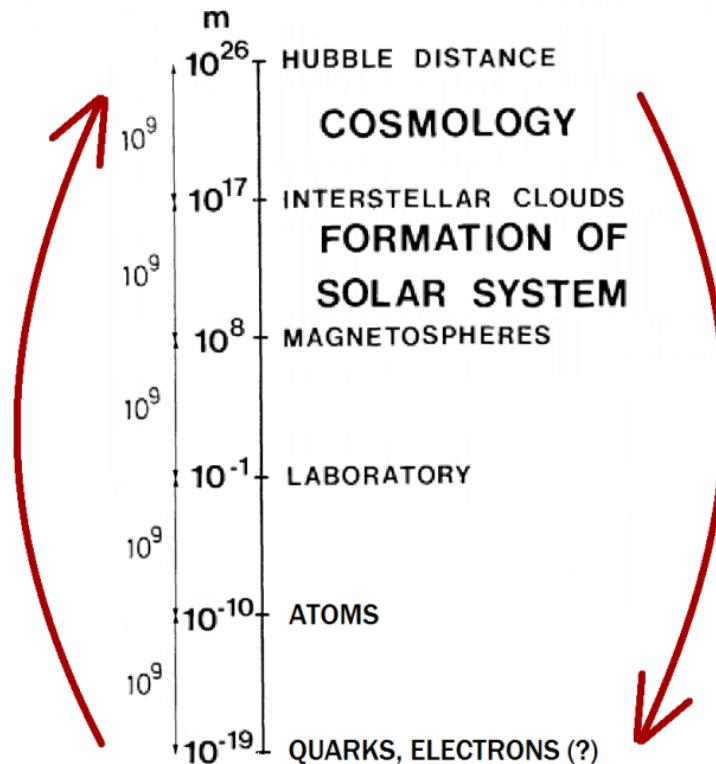
There is *no* variability:

- M. P. Silverman. Search for anomalies in the decay of radioactive Mn-54. *EPL*, 114, 2016, 62001;
- S. Pommé et al. On decay constants and orbital distance to the Sun—part I: alpha decay. *Metrologia*, 54, 2017, p. 1–18;
- S. Pommé et al. On decay constants and orbital distance to the Sun—part II: beta minus decay. *Metrologia*, 54, 2017, p. 19–35;
- S. Pommé et al. On decay constants and orbital distance to the Sun—part III: beta plus and electron capture decay. *Metrologia*, 54, 2017, p. 36–50.

# Conclusions

- 1) *Maybe we should change Alfvén's "triple jump" to *quintuple jump* and talk about electromagnetism being the primary force on all scales.*
- 2) *It seems many phenomena in nuclear and particle physics might be explained by structures arising from the electromagnetic field.*
- 3) *I propose "extended Gold scenario" where space weather conditions cause "short-circuiting" of the magnetospheric/ionospheric currents through the crust to produce earthquakes (details are unclear).*
- 4) *'Oumuamua's trajectory is aligned with the interstellar magnetic field; its very appearance *might* have been caused by the solar activity.*
- 5) *Solar System seems to be traveling along one of the [at least] pair of Birkeland currents.*
- 6) *Observed cycles in random processes' statistics and particle properties/fluxes might be related to the large scale alignments → *new astrology?**

# COSMIC QUINTUPLE JUMP



A feedback loop?

Micro determines the Macro,  
while  
Macro determines the Micro.

# Thank you!