THE SUNWHEEL DRIVE
Sun's QED home

Par 1 Introduction
The definition of the sunwheel is based on violation of Newton's law that without the onset of rotational momentum any cloud of matter cannot develop spontaneously rotation. Due to gravitational contraction in a cloud of gas it is possible and based on Sacharov's law of induction of dark matter.

This final calculation in this report shows the magnetic energy conservation in our Sun from the onset of a neutral tenuous gas cloud of hydrogen at a radius of 0.013 light years.

For those not familiar with dark matter physics, this first encounter between gravity generated by a mediating medium of dark matter, makes the calculations, although simple enough, difficult to grasp. Therefore a guide:
Newton's law of gravity: $g = \lambda c^2 /R^2$ $v^2 = 2\lambda c^2 /R$ $\lambda c^2 = G M$
With G the universal constant, M the macro mass, λ the event wavelength and c the velocity of light.

The uncertainty condition for dark matter determines that the coherence of the fast dark matter medium aligns the atoms given in the relations (1) and (2) with N the number of aligned dm atoms and also due to Sacharov's induction law of dark matter.

The angular momentum of $b = g (h/c)$ is allowed in exchange to the radial momentum from g as gravity. And due to the magnetic alignment in coherence of the atoms relation (3) is possible.
$g (h/c) N_b = m_e (2\pi c /\sqrt{\lambda}) R_b$ m_e electron mass
Where the radius R_b of the dark matter dipole and N_b the number of aligned electrons or mediated atoms and $\sqrt{\lambda}$ is the event leading frequency due to alteration of exchange between the fast medium and the inertia of the atoms.

Sacharov's law for dm induction is derived in chap 1 and 2. In chap 4 the exercises 4 and 10 derive the discovery of the dark matter angular momentum dipole.

Par 2 The overall set up of the calculations

The definition of the sunwheel is that a neutral cloud of hydrogen gas spread out in empty space generates rotation due to its own gravity attraction then apparently violating Newton's law of conservation of angular momentum.

Due to the dark matter induction by Sacharov's law the gas cloud is subjected to radial and tangential exchange for macroscopic entanglement which gives the onset for rotation in the cloud. What has to be sorted out is the work done by gravity radially then converting this into rotation energy.

As an example let us consider the Sun's mass for the cloud subjected to the escape energy of Lamb shift exchange of $5.87\ 10^{-6}$ eV or $9.404\ 10^{-25}$ Joule. Now for the initial condition there are two options to consider because the molecular distance or free path between molecules can be large.

a) Consider only electrons as intermediaries of the fast dark matter medium.
b) Consider the molecules to be subjected to the mediating mass of the H atom.

So (a) gives the number of electrons $N_o = 2\ 10^{30} / 9.109\ 10^{-30} = 2.196\ 10^{60}$ el.
and (b) gives the number of mediating dm atoms $N_o = 8.75\ 10^{57}$ dm at $m_m = 251\ m_e$.
Both (a) and (b) generate fast dm exchanges compared to the inertia of the atoms. Consequently the overall exchange is subjected to alternation of dynamic dm cell formation in the cloud under the leading square root of the event wavelength.

Data and relations for the calculations
At electron energy $w = ½\ m_e\ v^2 = 9.404\ 10^{-25}$ J $v = 1.015\ 10^3$ m/sec $R = 1.31\ 10^{14}$ m
and $g = 7.9\ 10^{-9}$ m/sec^2
With:
$M = 2\ 10^{30}$ kg $g = \lambda\ c^2 / R^2$ $v^2 = 2\lambda\ c^2 / R$ $m_e\ 2\pi\ c / \sqrt{\lambda} = 4.44\ 10^{-23}$
$h/c = 2.21\ 10^{-42}$ $h / (2\pi\ m_e) = 1.1584\ 10^{-4}$ $\lambda\ c^2 = 1.35\ 10^{20}$
$\lambda = 1500$ m $\sqrt{\lambda} = 38.7$ m $e = 1.602\ 10^{-19}$ Coulomb $m_e = 9.109\ 10^{-31}$ kg
Take for the radius R either R_w for work and R_b for angular momentum and N are either electrons or dm mediating atoms with subscripts w or b.

The Sacharov's dark matter entanglement relations for lossless exchange:
Work: $g\ (h/c)\ N_w = m_e\ g\ R_w$ $N_w = m_e\ (c/h)\ R_w = 4.122\ 10^{11}\ R_w$
Eliminate gravity g:
Angular mom.: $g\ (h/c) N_b = m_e\ (2\pi\ c / \sqrt{\lambda}) R_b$ $(R_b / \sqrt{\lambda})^3 = 1.1584\ 10^{-4}\ N_b$ $R_b^3 = 6.71\ N_b$

Note the relation for work given by $N_w = m_e\ (c/h)\ R_w = R_w / \lambda_e$ which is the reciprocal of the electron length used in the derivation of the qubit universe, see appendix.

The actual relations for the sunwheel drive:
In case $R_w = R_b = R$
$N_w = 4.211\ 10^{11}\ R$ $R^3 = 6.71 N_b$ then $N_w^3 / (4.211\ 10^{11})^3 = 6.71\ N_b$
$N_b = 5.011\ 10^{35}\ N_w^3$ (1)
In case of $N_b = N_w = N$
$N = 4.211\ 10^{11}\ R_w$ $R_b^3 = 6.71\ N$ then $R_b^3\ 6.71 \times 4.211\ 10^{11} = R_w$ (2)

Sun's angular momentum at $R = 7\ 10^8$ m and $f = 25.4$ dd or $4.557\ 10^{-7}$ Hz $f\ R = 319$
At $R = 1.31\ 10^{14}$ m $f\ R = 319$ $f = 2.435\ 10^{-12}$ Hz
Check on energy conservation due to electron:
$½\ m_e\ R^2\ \omega^2 = 9.404\ 10^{-25}$ J $\omega^2 = 1.203\ 10^{-22}$ $f = \omega / 2\pi = 1.746\ 10^{-12}$ Hz
Ratio $2.435\ 10^{-12} / 1.746\ 10^{-12} = 1.395$
Most likely the deviation is explained as the reciprocal of the end velocity of the electron to the dm cells. Then the reciprocal of $(½\ \sqrt{2})c$ of the electron either is or is just below the value of $\sqrt{2}$.

The angular momentum expression for the magnetic dm dipole radius:
$g\ (h/c)\ N_b = 4.44\ 10^{-23}\ R_b$ (3)

Initial condition with electrons $N_o = 2.196\ 10^{60}$
Apply (1) $2.196\ 10^{60} = 5.011\ 10^{35}\ N_b^3$ $N_b = 1.637\ 10^8$ electrons
$R_w = 1.637\ 10^8 / 4.211\ 10^{11} = 3.886\ 10^{-4}$ m
Apply (2) $R_b^3 = 2.766\ 10^{12}\ R_w$ $R_b = 1.024\ 10^3$ m $R_b = 6.71\ N_b$ $N_b = 237$ el
Apply (3) $7.9\ 10^{-9} \times 2.21\ 10^{-42}\ N_b = 4.44\ 10^{-23} \times 1.024\ 10^3$ $N_b = 2.605\ 10^{30}$ el
Apply the square root rule for alternation $\sqrt{2.196\ 10^{60}} = 1.482\ 10^{30}$
Ratio $2.605 / 1.482\ (10^{30}) = 1.76$

Electromagnetic radiation due to work
$\omega\ R_w = v$ $\omega = 1.015\ 10^3 / 3.89\ 10^{-4} = 2.61\ 10^6$
$f = 4.15\ 10^5$ Hz $\lambda = c\ f = 1.25\ 10^{12}$ m
Very long wave length and mostly absorbed in the cloud of $R_o = 1.31\ 10^{14}$ m.

Take $R_o = 7\ 10^{12}$ m escape $1.096\ 10^{-4}$ eV N(Lamb = $1.096\ 10^{-4} / 5.87\ 10^{-6} = 18.7$
$1.096 \times 1.602\ 10^{-19} = 1.76\ 10^{-26}$ Jv $= 6.21\ 10^3$ m/sec
Apply (1) $R_w = 3.89\ 10^{-4} \times 18.7^3 = 2.54$ m
$\omega\ R_w = v$ $\omega = 6.21\ 10^3 / 2.54 = 2445$ $f = 389$ Hz $\lambda = c\ f = 1.17\ 10^{11}$ m
Still a long waves but by further contraction the range of radio wave length becomes possible.

Initial condition mediating mass $N_o = 8.75\ 10^{57}$ dm atoms
Apply (1) $8.75\ 10^{57} = 5.011\ 10^{35}\ N_b^3$ $N_b = 2.594\ 10^7$ dm
$R_w = 2.594\ 10^7 / 4.211\ 10^{11} = 6.16\ 10^{-5}$ m $R_b^3 = 2.766\ 10^{12}\ R_w$
Apply (2) $R_b = 554.4$ m
Apply (3) $7.9\ 10^{-9} \times 2.21\ 10^{-42}\ N_b = 4.44\ 10^{-23} \times 554.4$ $N_b = 1.41\ 10^{30}$ dm at
Compare to mediation alternation:
$\sqrt{}8.75\ 10^{57} = 9.354\ 10^{28}$ ratio: 15.1 times
It means that the electron dm dipole should be 15.1 times faster in rotation.
Compare to electron $1.41 / 1.482\ (10^{30}) = 0.95$

The initial balance of magnetic energy to *be compared to the present-day balance*
The present-day balance $R_o = 7\ 10^8$ m, volume $1.437\ 10^{27}$ m^3 and according to exer 4 the energy density of 21 cm flux tubes $4.43\ 10^6$ J/m^3 Total $\underline{6.366\ 10^{33}}$ Joule.
Further apply (3) $7.9\ 10^{-9} \times 2.21\ 10^{-42}\ N_b = 4.44\ 10^{-23} \times 1.31\ 10^{14}$ $N_b = 3.34\ 10^{41}$ electrons for the initial number of electrons.

Total initial electron energy with the escape energy at $R_o = 7\ 10^8$ m of 1.096 eV :
$9.404\ 10^{-25} \times 3.34\ 10^{41} = 3.14\ 10^{17}$ J $N = 1.096 / 5.87\ 10^{-6} = 1.868\ 10^5$
The radial contraction in flux conservation: $1.31\ 10^{14} / 7\ 10^8 = 1.871\ 10^5$ which is of further no relevance. The radial work is proportional to cubic power of N(lamb) but the magnetic energy conservation is proportional to the 4th power giving: $(1.868\ 10^5)^4 = 1.218\ 10^{21}$
The energy conservation:
$W_1 = 3.14\ 10^{17} \times 1.218\ 10^{21} = \underline{3.87\ 10^{38}}$ J
Now take $N_b = 2.605\ 10^{30}$ then $9.404\ 10^{-25} \times 2.605\ 10^{30} = 2.45\ 10^6$ J
Take $R_b = 554.4$ dark matter radius expansion of $R_{dm} = R_o$: $(7\ 10^8 / 554.4) = 1.2625\ 10^6$
$W_2 = 2.45\ 10^6 \times (1.2625\ 10^6)^2 \times 1.218\ 10^{21} = 4.75\ 10^{39}$ J
with ratio $39.65 / 3.87\ (10^{38}) = 10.25$ $W_2 / W_1 > 1$ can never exceed W_1
So $W_3 = 2.45\ 10^6 \times 1.2625\ 10^6 \times 1.218\ 10^{21} = 3.77\ 10^{33}$ J
which makes the dm expansion linear and therefore a consequence of the angular momentum conservation. The ratio to $6.366\ 10^{33}$ J is about a half. This could mean the acceleration to ½ √2c end velocity is not accounted for (energy square power).

Magnetic energy ratio to present-day:
$\underline{3.87\ 10^{38}} / \underline{6.366\ 10^{33}} = 6.08\ 10^4 = 247^2$
In terms of energy the conversion of the mediation mass of $251 m_e$ as the square power due to alternation between the fast network of dark matter and the relaxation to the inertia state of the Hydrogen atoms. For momentum conservation the ratio is 251. What seems at odds is that the deviation of $(251 / 247)^2 = 1.033$ which is just within a truncation error of 1.017 validating the deviation ratio of 4.320. See not below.

In conclusion, considering the used expressions in the calculations together with the conservation of angular momentum and energy the derived equalities are absolutely correct. Therefore the dark matter medium is the gravity driven mediation for atomic inertia matter. An incredible unexpected phenomena in physics.

Remarkable is to realise that the magnetic toroidal conservation at Bohr's radius drives the process of gravity contraction with the mediating mass as go in between to the internal toroidal electron exchange shown in chap 2 par 8 and 9. In these paragraphs from par 4 to 9 it is shown that all atoms of any kind are subjected to the absolute parameters of Bohr's radius, Lamb shift parameters and the 21 cm wavelength of the electron. Although the observable state for the hydrogen molecule represents the well known resonance for astronomical radio frequencies.

Note Lamb's parameters are $5.87\ 10^{-6}$ eV and $\lambda = 5.1\ 10^{-7}$ m determining the quantum ratios for the ionisation of 13.59 eV and the 21 cm.

Namely $13.59 / 5.87\ 10^{-6} = 2.315\ 10^{6}$ $21.1 / 5.06016\ 10^{-7} = 4.170\ 10^{7}$
Then $4.170\ 10^{7} / 2.315\ 10^{6} = 18.012$ $\sqrt{18.012} = 4.244$ with $3\sqrt{2} = 4.242640$

The ratio 4.244 is close to 4.2462. The alternation exchange between the fast and the relaxation states as was derived in Intermezzo/ chap 4 exer 10

Remark about the orientation of the rotational axis of a sunwheel
How does a not spinning gas cloud find its orientation in 3D space?
Using the property of macroscopic entanglement for dark matter induction of the intermediate medium the problem can be seen classically for a collision length of 0.01 lyrs in the first instance. The outcome suggests the random distribution of the rotation axes of spheres with that radius as a boson kind distribution. For galaxies with a macro mass of 10^{11} times the solar mass the fast dm medium stretches up to 2.6 billion lyrs giving a similar random distribution in our observable cosmos.

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