2000 – 2020 Summary of Gravitational Work Hardware Edition

Gary V Stephenson
Seculine Consulting
12/12/2020

Presentation Outline

- **The Timeline**
  - Stuff I either remember doing or found on the internets

- **The Highlights**
  - Thing 1: Lab detection of HFGW
  - Thing 2: Lab generation of HFGW
  - Thing 3: Gravitational field propulsion
  - Possible Thing 4: a Tic Tac?

- **The Future (maybe)**

Gravitational Publications Timeline

- 2003, https://www.researchgate.net/publication/346651952_The_Application_of_High_Frequency_Gravitational_Waves_HFGW_to_Communication (Mitre, MacLean VA)

- 2003, Trip Report and meeting minutes from the 1st International HFGW Workshop (Mitre, MacLean VA)

- 2004, Review of Heim Theory (unpublished, but now posted to ResearchGate)

- 2005, The Biefeld Brown Effect and the Global Electric Circuit (written 2000, published in STAIF 2005)

- 2005, Analysis of the Demonstration of the Gertsenshtein Effect

- 2007, The Value Estimation of an HFGW Frequency Time Standard for Telecommunications Network Optimization

- 2007, Trip Report and meeting minutes from the 2nd International HFGW Workshop (Earthtech, Austin, TX)

- 2008 Analyses of the Frequency and Intensity of Laboratory Generated HFGWs

- 2008, Proposed UltraHigh Sensitivity High-Frequency Gravitational Wave Detector

- 2008, Perturbative Photon Fluxes Generated by High-Frequency Gravitational Waves and Their Physical Effects (EPJC)

Gravitational Publications Timeline

- 2008, Signal photon flux and background noise in a coupling electromagnetic detecting system for high-frequency gravitational waves, Physical Review D

- 2008, Review of Shawyer EM drive (unpublished, proprietary)

- 2009, The Standard Quantum Limit for the Li-Baker HFGW Detector

- 2009, Lessons for Energy Resonance HFGW Detector Designs from Mass Resonance and Interferometric LFGW Detectors

- 2011, A New Theoretical Technique for the Measurement of High-Frequency Relic Gravitational Waves

- 2017, Production of a Low Frequency Gravitational Wave (LFGW) via Heterodyned High Frequency Gravitational Waves (HFGWs)

- 2017, Trip report and meeting minutes from the 3rd International HFGW Workshop (Chongqing University, China)

- 2018, Proposal for Laboratory Generated Gravitomagnetic Field Measurement (Marcel Grossmann)

- 2019, Extended Cases of Laboratory Generated Gravitomagnetic Field Measurement Devices

- 2020, Review of Sutton drive (private correspondence with inventor)

Thing 1, Lab Detection of HFGW

- Gravitational waves can perturb standing electromagnetic waves, permitting the detection of incoming HFGW

- In 3D Synchro-Resonance (3DSR) detectors the measured signal is orthogonal to both the sense electric field and the sense magnetic field, improving sensitivity
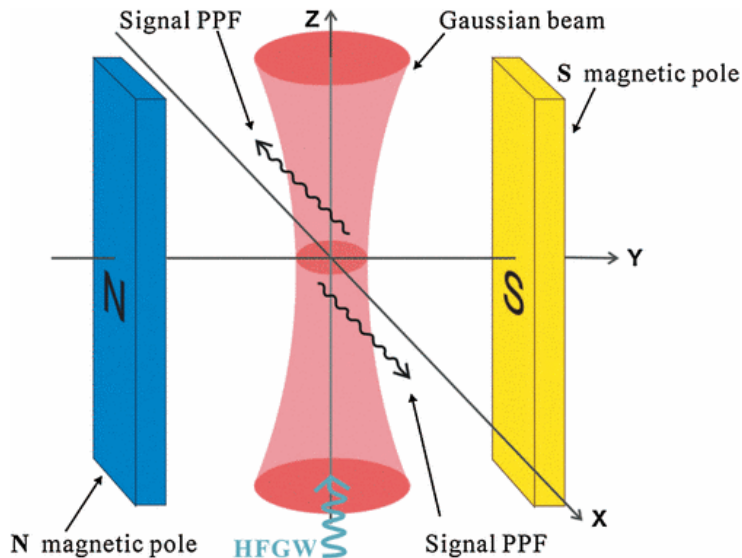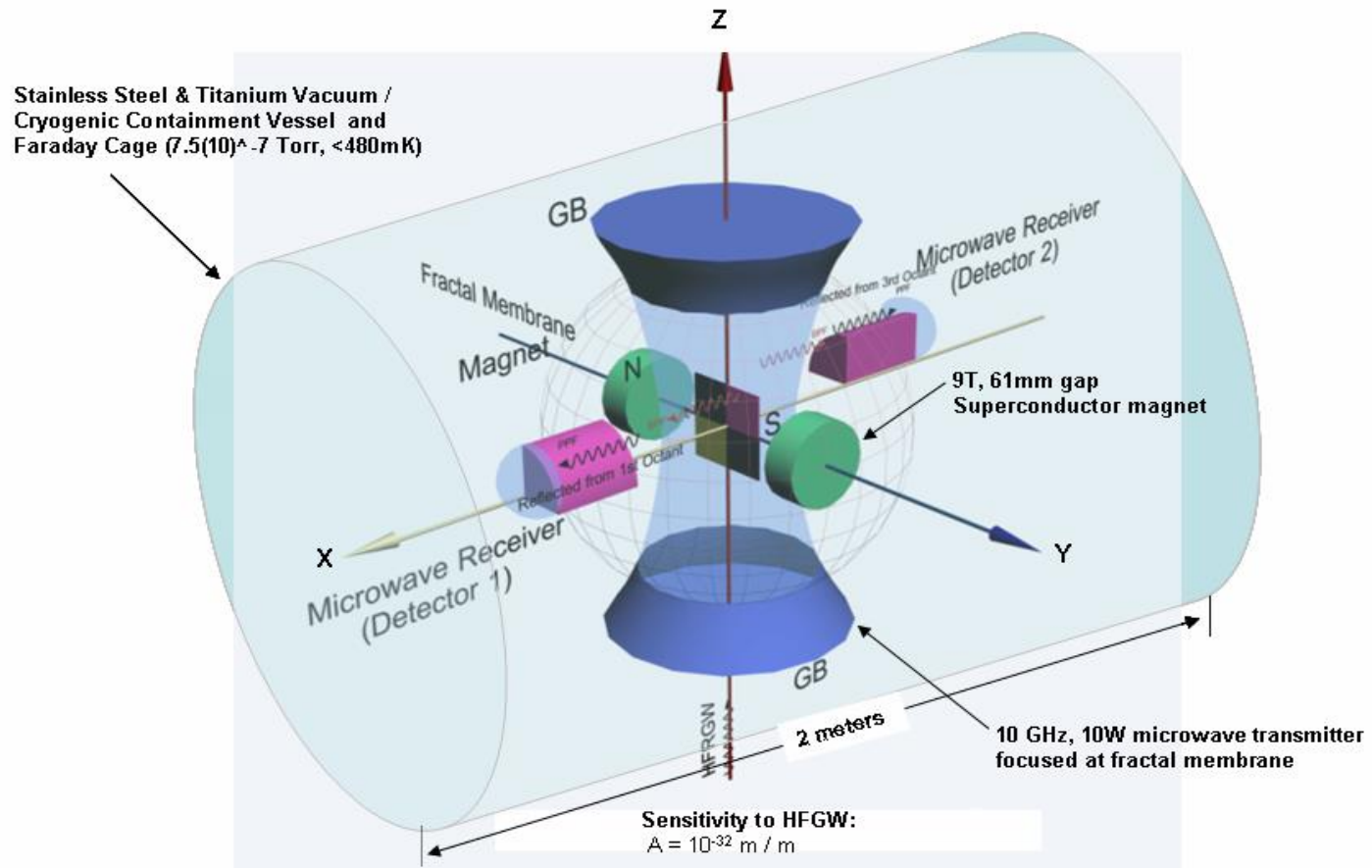
Signal PPF — Z — Gaussian beam — S magnetic pole — Y — N — S — X — N magnetic pole — HFGW — Signal PPF

Figure 4

When the HFGW propagates along the z direction in the coupling system of the GB and the transverse static magnetic field $\overset{\rightharpoonup}{B}_y^{(0)}$, the resonant interaction ($\omega_e = \omega_g$) of the HFGW with the EM fields will generate not only the longitudinal perturbative photon flux $n_z^{(1)}$ but also the transverse perturbative photon fluxes ($n_x^{(1)}$ and $n_y^{(1)}$) in the x and y directions due to the spread property of the GB itself. This is an important difference between Figs. 2, 4. Moreover, unlike $n_z^{(1)}$ and $n_z^{(0)}$, $n_x^{(1)}$ and $n_x^{(0)}$ have very different distribution and decay rates.

Reuse & Permissions

Reference: 2009 Fangyu Li et al., https://journals.aps.org/prd/abstract/10.1103/PhysRevD.80.064013

How would we build one?

- Non-trivial; requires high electric and magnetic field strengths, and very sensitive detectors, all in a high vacuum dewar at very low temperatures
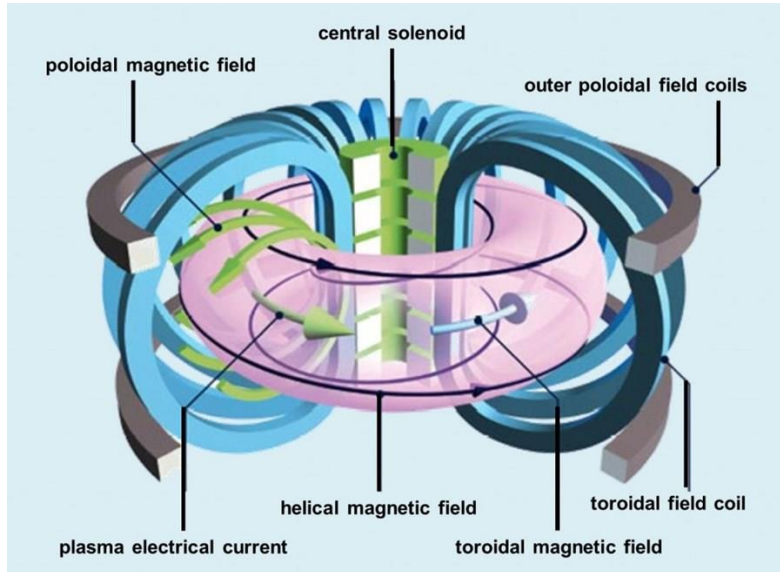
Quadrupole plasma oscillations can be used to generate HFGW


Reference:
https://www.researchgate.net/publication/346651952_The_Application_of_High_Frequency_Gravitational_Waves_HFGW_to_Communication

How would we build one?

- Tokomaks are already built!
- But, a laundry list of modifications and new components would be required to repurpose:
  - Microwave Plasma Excitation Coils
  - Microwave shielding
  - Updates to plasma sensors
  - Physical updates to other existing systems to accommodate above changes
  - Accommodation of an HFGW detector in close proximity
- Above changes may be far from complete and would require study by those schooled in the art of building and operating tokomaks
- Some other generation options:
  - https://www.youtube.com/watch?v=wzOPqWXWCdc
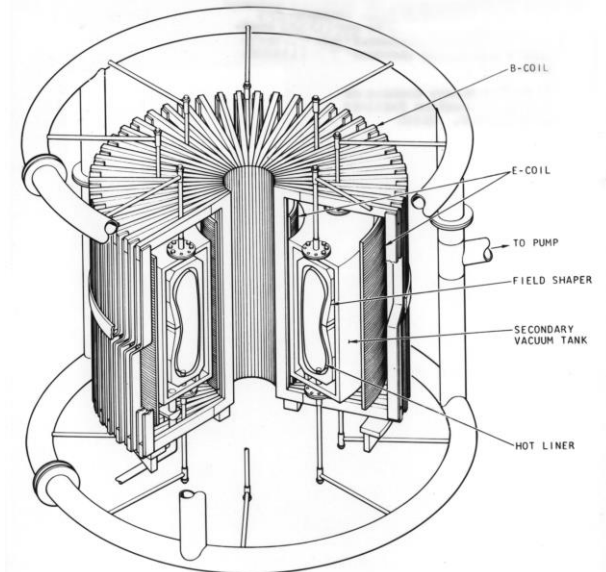
DIII-D, General Atomics, San Diego

Thing 3, Gravitational field propulsion

- In early 1960's Robert Forward invented concept of using a toroidal mass flow (LHe, relativistic electrons, etc) to develop a scalar gravitational field in center of the toroid via gravitomagnetics
- Such as scheme could be used for the propulsion of a saucer shaped craft, (but *not* with current technology scales)
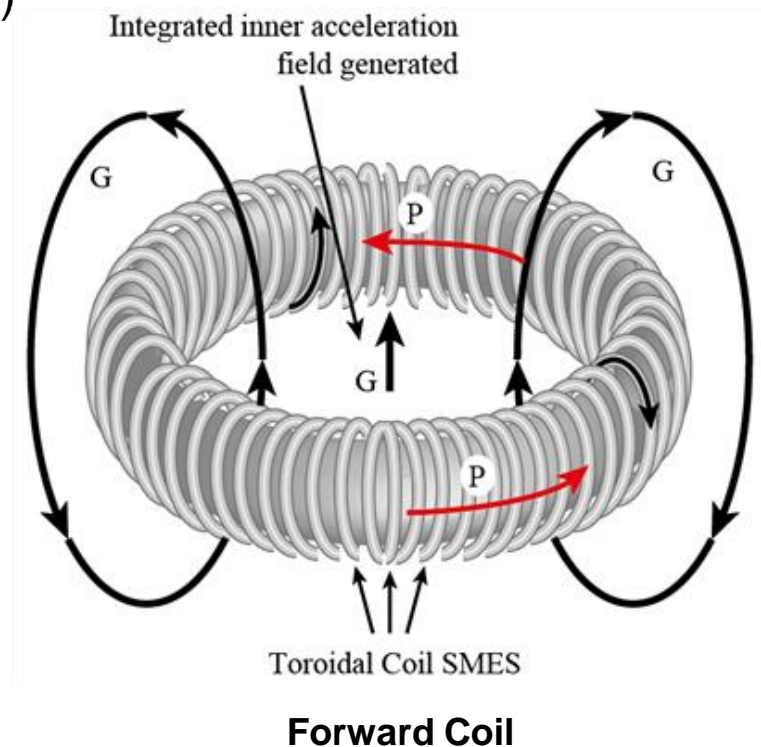
As developed in Forward 1962 Ref. [1] the linear force G_f developed by mass flow toroid of Figure 1 is given by Equation (1):

$$G_f = \left(\tfrac{\eta}{4\pi}\right)\left(N\dot{T}r^2/R^2\right)$$

where η is gravitomagnetic permeability, $\eta = \eta_o\eta_r$.

Reference:
https://www.scirp.org/journal/paperinformation.aspx?paperid=91055

Integrated inner acceleration field generated

Toroidal Coil SMES

Forward Coil

How would we build one?

- *For a prototype test model*, (without use of metamaterials in the center) obtain a billion miles of SC nanowire, wind it in a toroid shape, figure out SC connectors to hook the pieces together, and build it so that internal Lorentz forces don't rip it to pieces (use of metamaterials may improve G coupling)
- Along with an absolute quantum gravimeter for scalar field detection bury it deep in an underground bunker, so that if it quenches unexpectedly it doesn't destroy a city (see the 2015 Tianjin explosion for an example of what 1TJ can do)
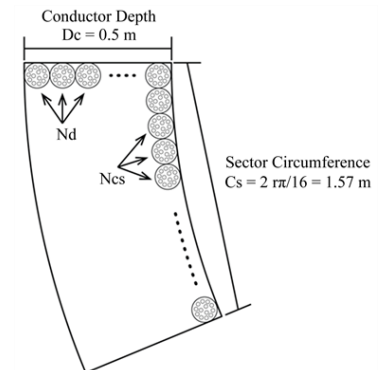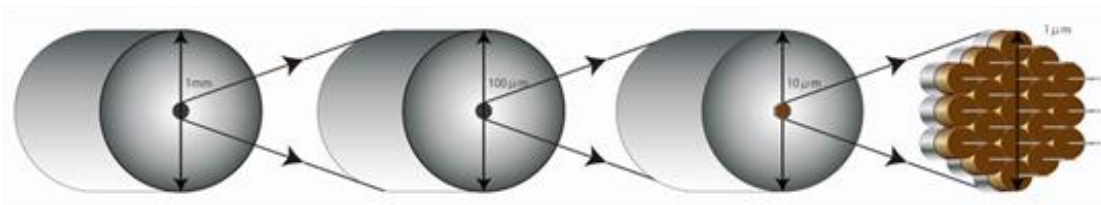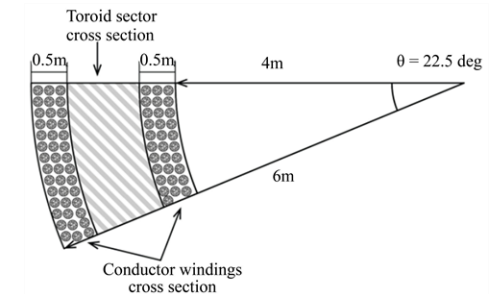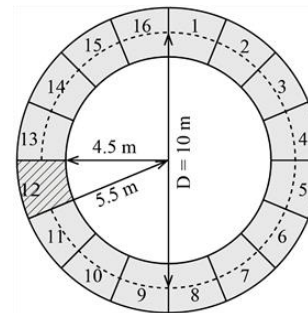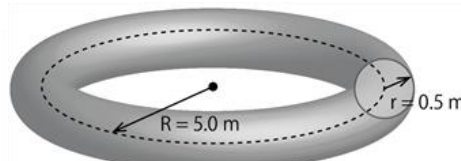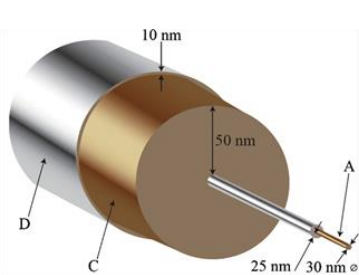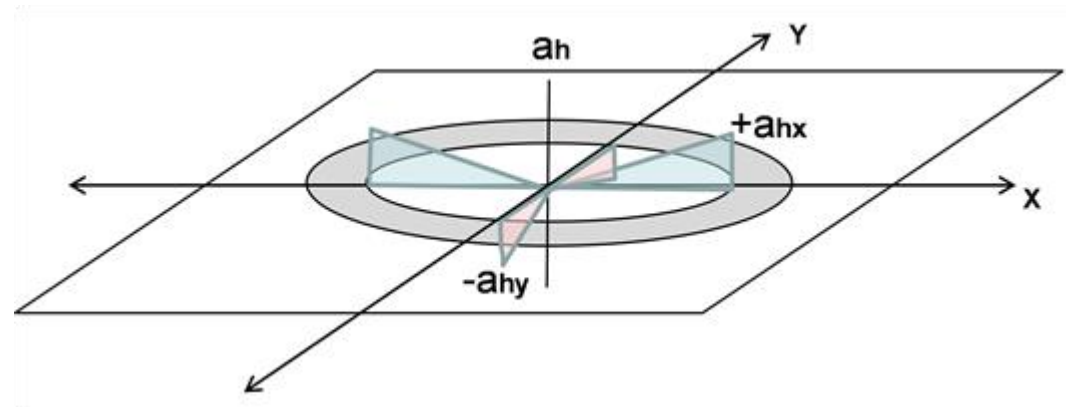
Another use of a Forward Coil

- In addition to developing a scalar static field using uniform DC current, if powered in sections could be used to develop an oscillating quadrupole field capable of generating and emitting HFGW
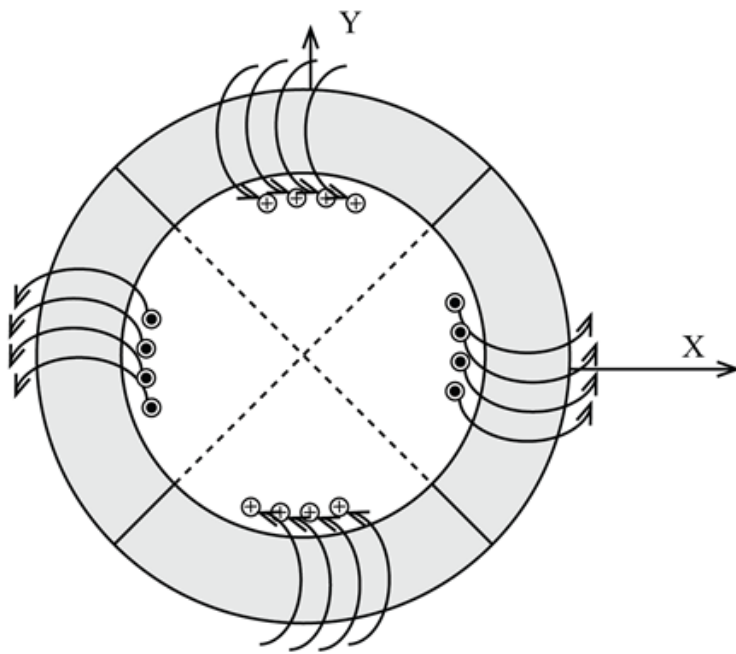
Snapshot of quadrature current distribution needed to develop a quadrupole field moment

Snapshot of the predicted gravitational field distribution for a current quadrature case
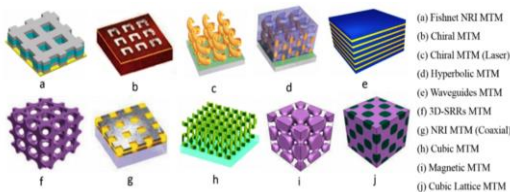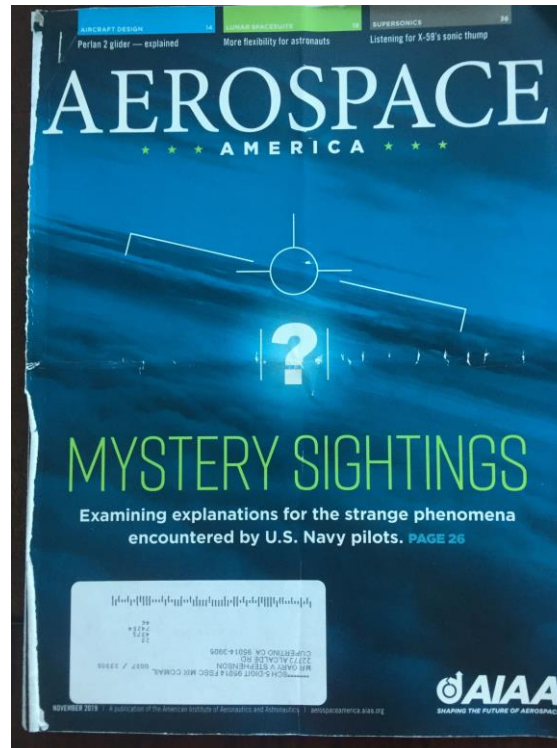
What's a "Tic Tac"? Thing 4?

- "Tic Tac" is the nickname for the UFO tracked by an AN/ASQ-228 ATFLIR mounted on an F18, deployed from the USS Nimitz, in 2004
    - Discussed by Hal Puthoff in this talk: https://www.youtube.com/watch?v=pOxcUKzrY_U
- Jack Sarfatti has theorized that meta materials used on board the tic tac could enable it to shape space time as a source of field propulsion

USS Nimitz 'Tic Tac' UFO:
Declassified Video
(credit History Channel)

(a) Fishnet NRI MTM
(b) Chiral MTM
(c) Chiral MTM (Laser)
(d) Hyperbolic MTM
(e) Waveguides MTM
(f) 3D-SRRs MTM
(g) NRI MTM (Coaxial)
(h) Cubic MTM
(i) Magnetic MTM
(j) Cubic Lattice MTM

Examples of metamaterials (credit JS)

Nov 2019 cover story (credit AIAA)
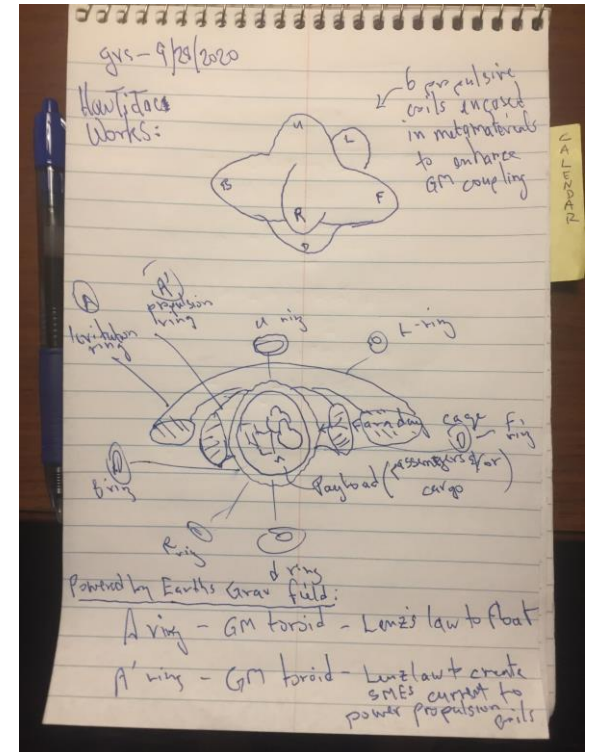
How Forward coils might be used (credit GVS)

Who is Jack Sarfatti? - a friend of Hal's

2020 Estes Park lecture is In dropbox (need to D/L mp4 to laptop to view, and go to 1 hour in):
https://www.dropbox.com/sh/pxa2r8hmexq89n1/AACSjPL3UjFbJeq1ckNq3osha?dl=0

Ricci curvature tensor

Ricci scalar curvature

Stress Energy Tensor

New term S is a zero rank tensor representing the complex value scalar field effect created by presence of matter &/or metamaterials

Further discussion in this UAP Task Force study: https://besacenter.org/wp-content/uploads/2020/11/183-Milburn-study-final.pdf

Jack's scalar field term
in Einstein's field equation

From Estes technical paper for the Proceedings:

"The Stress-Energy Tensor of the Electromagnetic Field in Meta-Materials
Explaining the Low Energy Zero G-Force Warp Drive of the "Tic Tac" Unidentified Aerial Vehicles
Observed by US Naval Air Force Battlegroups Nimitz (2004) and Roosevelt (2015)"

<u>Asserts:</u>

- Warp Drive/Wormhole are in static non-radiative confined near field limit.

- Gravity beam weapons in dynamic unconfined radiative far field

Either of which can be created using the…

<u>Sarfatti Susceptibility Scalar Field S(x)</u>

$G/c^4 \longrightarrow (G/c^4)S(x)$

$S(x) = Re\{S(X)\} + iIm\{S(x)\}$

$i^2 = -1$

$Guv(x) = 8pi(G/c^4)|S(x)Tuv(x)|cos(@)$

where $Tan(@) = Im\{S(x)Tuv(x)\}/Re\{S(x)Tuv(x)\}$

$S(x)$ and $Tuv(x)$ have imaginary dissipative parts (Kramers Kronig dispersion relations)

$T'(x) = S(x)Tuv(x)$ = renormalized stress-energy tensor of the EM pump field at a meta-material resonance. $|S(x)| >> 1$

The S-Field symbol is:

cos(@) > 0 attractive <u>gravity</u> red shift from contracting space at meta-atom node of meta-material lattices (within lattices) - '**nose' of Tic Tac**

cos(@) <0 repulsive <u>antigravity</u> blue shift from expanding space - at 'tail' of Tic Tac (this shifts since hull is pixelated the dissipative phase shift @ is controlled by EM fields at each meta-atom

Note when S —> 0 we have a sensitive detector of weak gravity signals.

Summary of my 2 decades with gravity

- Annual Score: Gravity 20, Gary 0

- I've kissed a lot of frogs
  - So far none have turned into princes

The future: what's next?

- Frogs I've not yet kissed
    1. A real program for building and testing a 3DSR HFGW detector
    2. A real program for developing a Plasma Tokamak generation of HFGW
    3. A real program for investigating gravitomagnetic toroid generation of DC scalar gravitational field for propulsion

- Using 1 & 2 in laboratory experiments will enable 3, and maybe help understand 4
    - Using 1 & 2 the lab testing of the gravitational index of materials could help dramatically improve the performance of DC gravitational field propulsion
    - Per Jack Sarfatti, Einstein's field equations are missing a scaling term "S" in the gravitational coupling 'constant', but without lab equipment to measure the effects on coupling from meta material we will never know

- On Tic Tac's, the question isn't "are they real" but "what are we going to do about it?"
    - Yes, they are real, see walkthrough of Milburn Report on UAP Task Force for a good summary: https://www.youtube.com/watch?v=t2l_-ixzNKQ&t=26s
    - *Opinion*: We're not told because USG is doing nothing: "The strongest guard is placed at the gateway to nothing. Maybe because the condition of emptiness is too shameful to be divulged." – F. Scott Fitzgerald
    - What could be done by USG? How about standing up a well funded gravitics lab?