Engineering Design Principles

Benjamin T Solomon
BSc(Eng), Dip OR, MAOR, MBS(Finance)

This presentation has been updated for the discussion of Jan 07 2020.

Special thanks to Mike Doty and Eric Ayer

About

- Contributor:
  - SeekingAlpha.com
  - Huffington Post
  - LifeBoat Foundation

- Major discoveries:
  - $g=\tau c^2$ – massless, universal (a 1st in 300 years)
  - $G_iM_i=k_{iso}$ – gravitational coefficient
    - Expansion not due to dark matter
  - Probability v Randomness

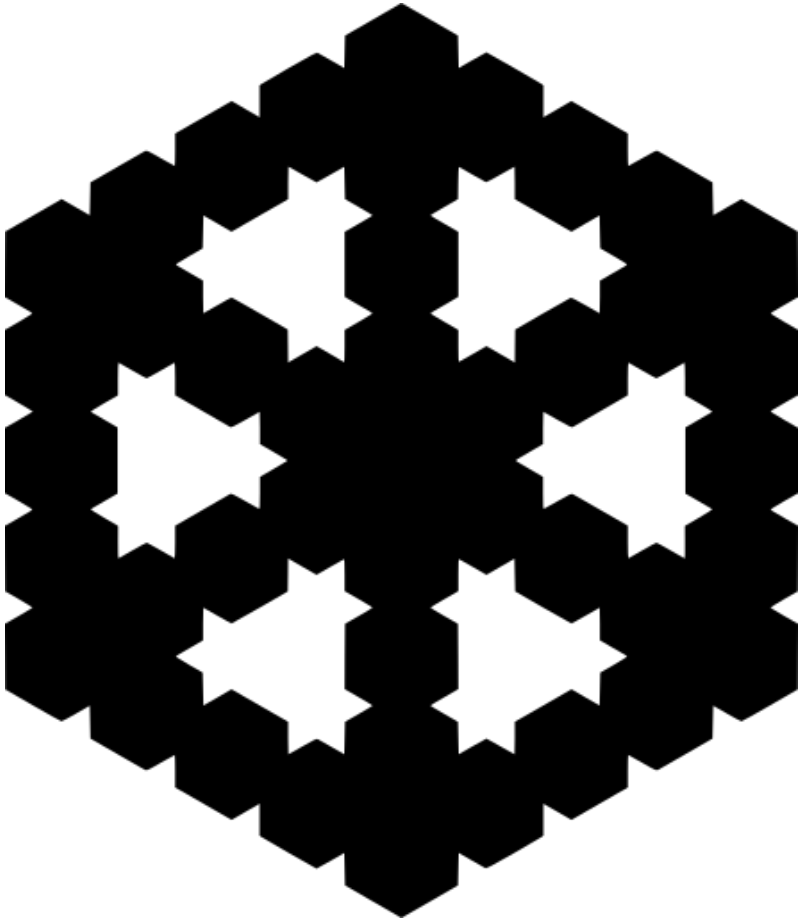
Philosophy: Cannot Beat the Experts

- A 100,000 scientist after 100 years
  - Couldn’t solve for gravity modification
  - Using their RSQ theories (Relativity, String & Quantum)
  - Whom am I to do better?

Philosophy: How to do it differently?

- Key is to use a different approach
  - Data Analytics
  - Look at Nature's data not other people's theories
  - Re-examine what Nature is telling
- Need to explain known phenomena while proposing new phenomena

Mapping Phenomena Determines . . .

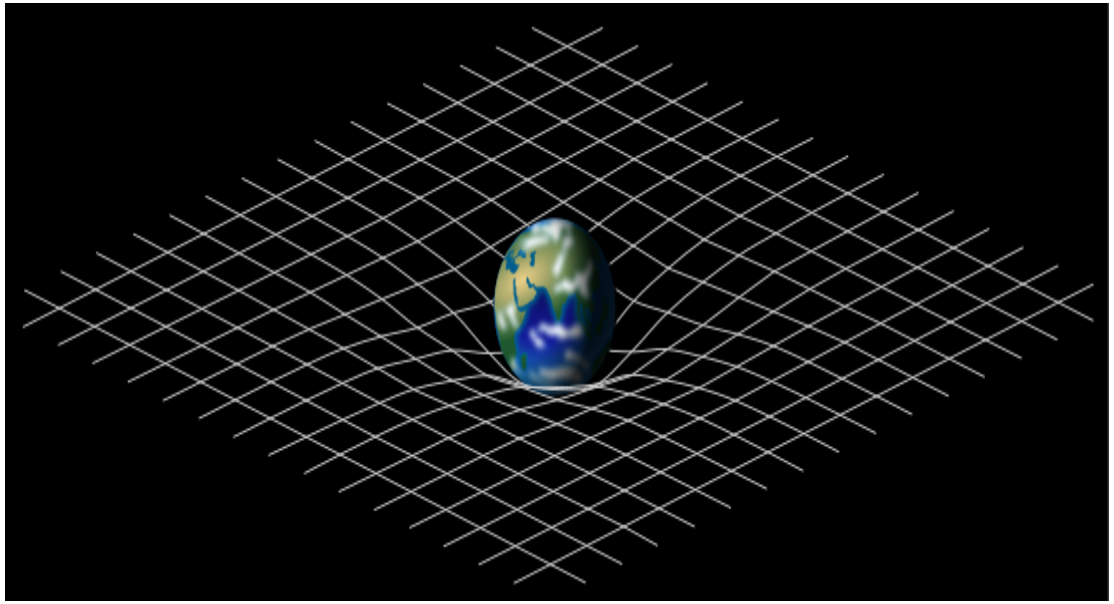


- How big is this snowflake?
- See what you know
- Know what you see
- Sabine Hossenfelder
  http://backreaction.blogspot.com/

Mathematics: The Loss of Certainty

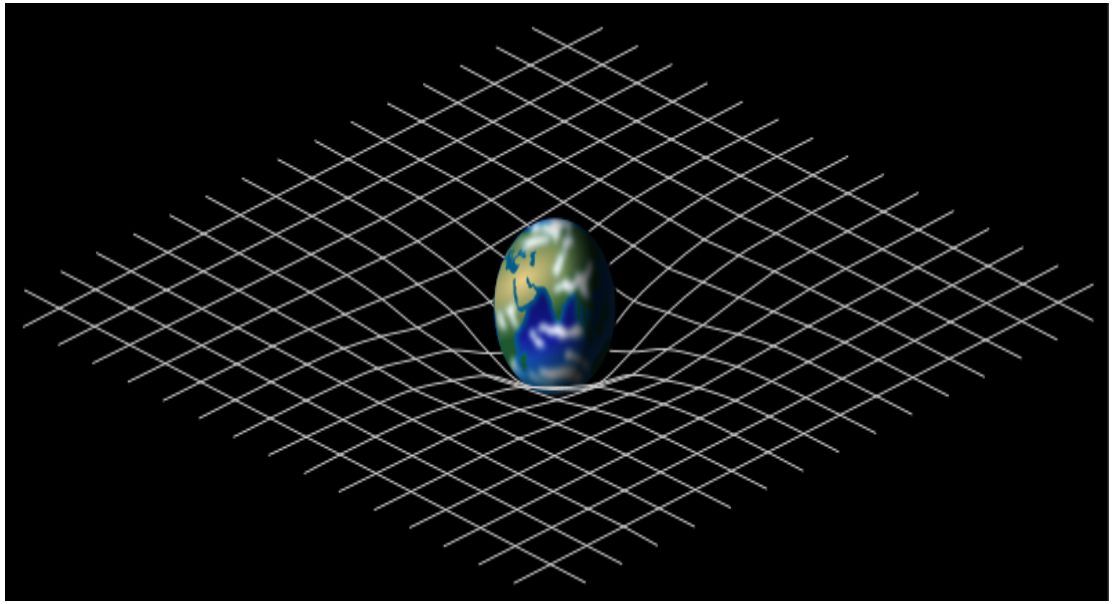
- Mathematics has become so powerful that it can be used to prove anything
- Paraphrasing Prof. Morris Kline
- But I would add,
  - On the other end of this spectrum if you don't have a formula you probably don't have all the facts

Why Can’t GR Deliver Gravity Modification?



- ?
- Any suggestions?

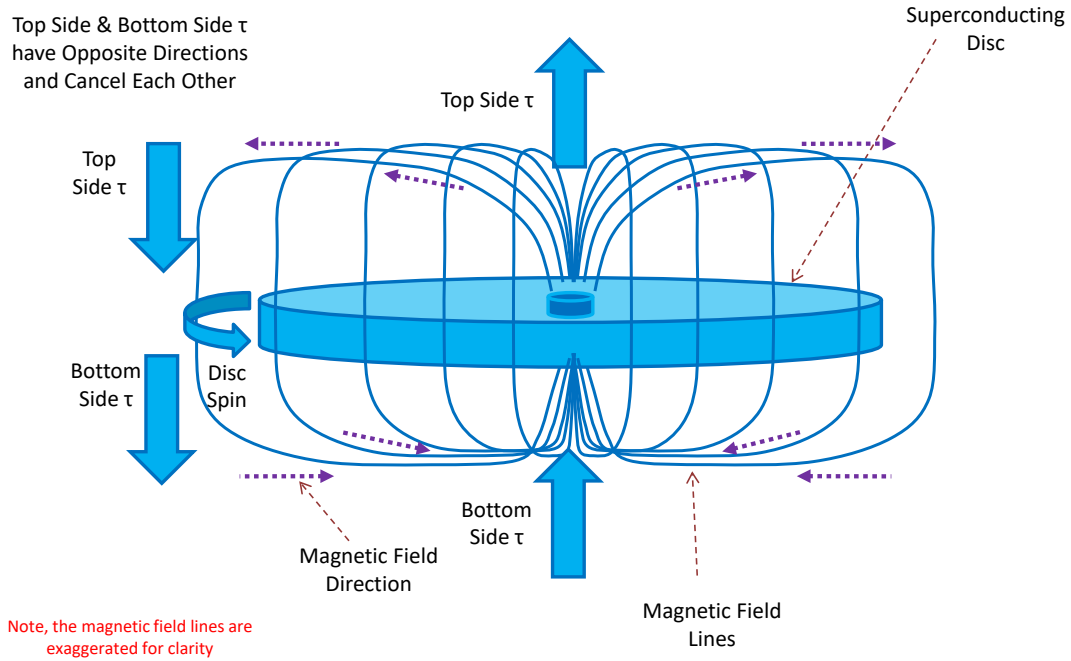
Why Can’t GR Deliver Gravity Modification?



- GR describes the field
- Assumes mass is the source
- Modification requires an alternative source

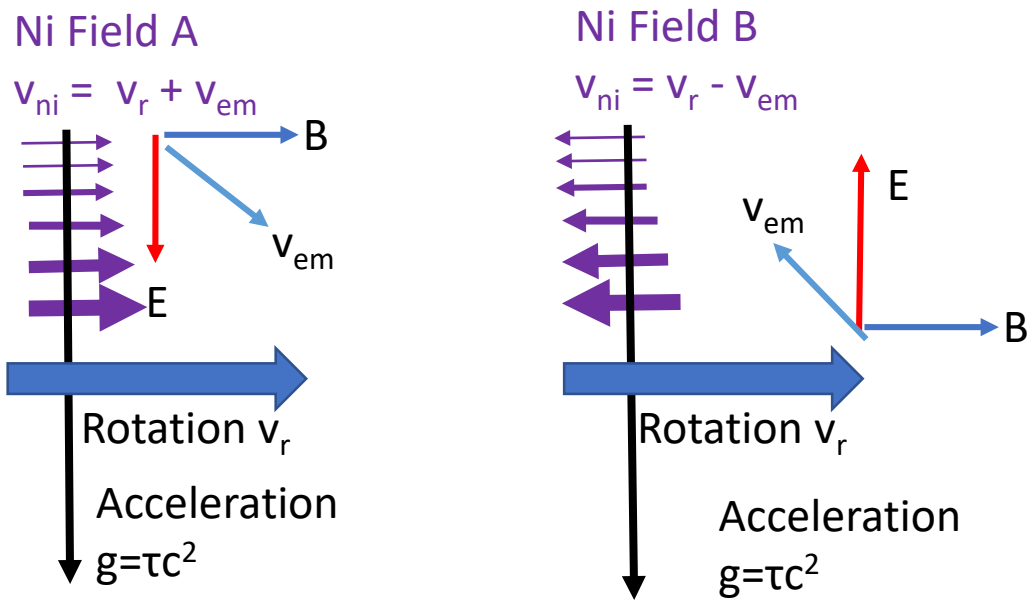
Engineering Principles

4 Engineering Design Principles



- Field exhibit
  - Ni Field: Spatial velocity gradient
  - Asymmetrical and non-cancelling
  - Vectoring
  - Modulation

Ni Field: Spatial Velocity Gradient

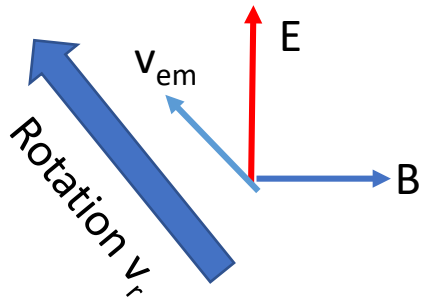


- Ni field is a spatial gradient of velocities v_{ni}
- The direction of the E & B fields, in some situations does not matter as they can produce the same velocity gradient.

Additional Considerations (i)

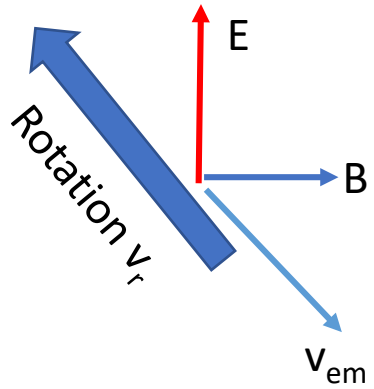
Ni Field A

$v_{ni} = v_r + v_{em}$



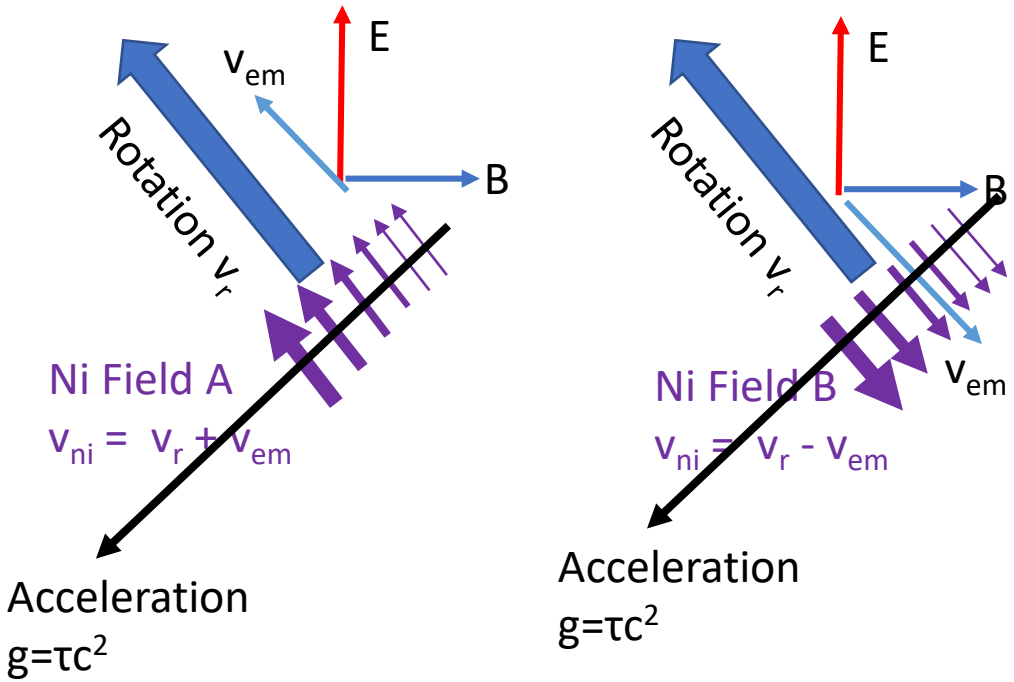
Ni Field B

$v_{ni} = v_r - v_{em}$



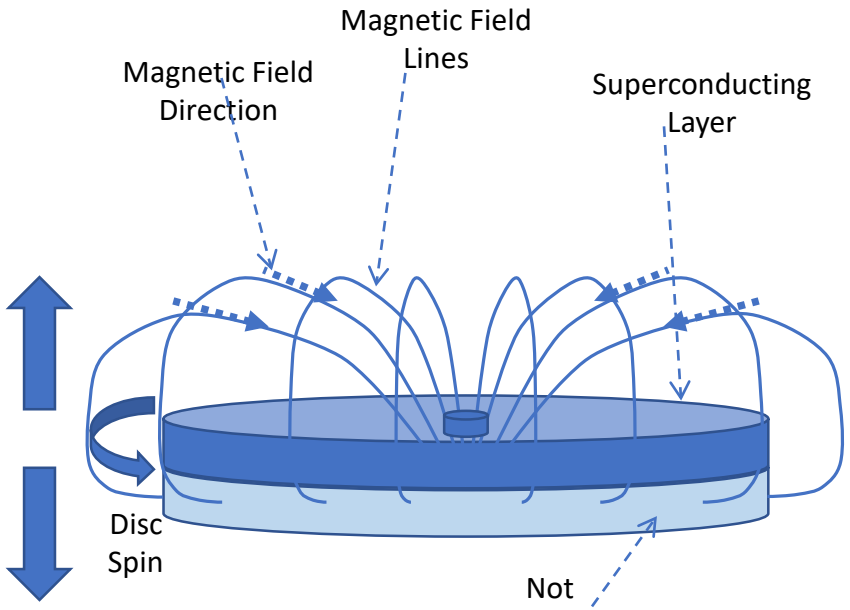
- Create a Ni field:
  - Orthogonal electric and magnetic fields
  - Relative physical motion between the electric and magnetic fields → electromagnetic velocity v_{em}
  - Electromagnetic velocity vector v_{em} should be parallel to the physical velocity vector v_r

Additional Considerations (ii)



- Create a Ni field:
  - Spatial gradient of velocity vectors = Net physical and electromagnetic velocities
  - Acceleration is orthogonal to this spatial velocity gradient.

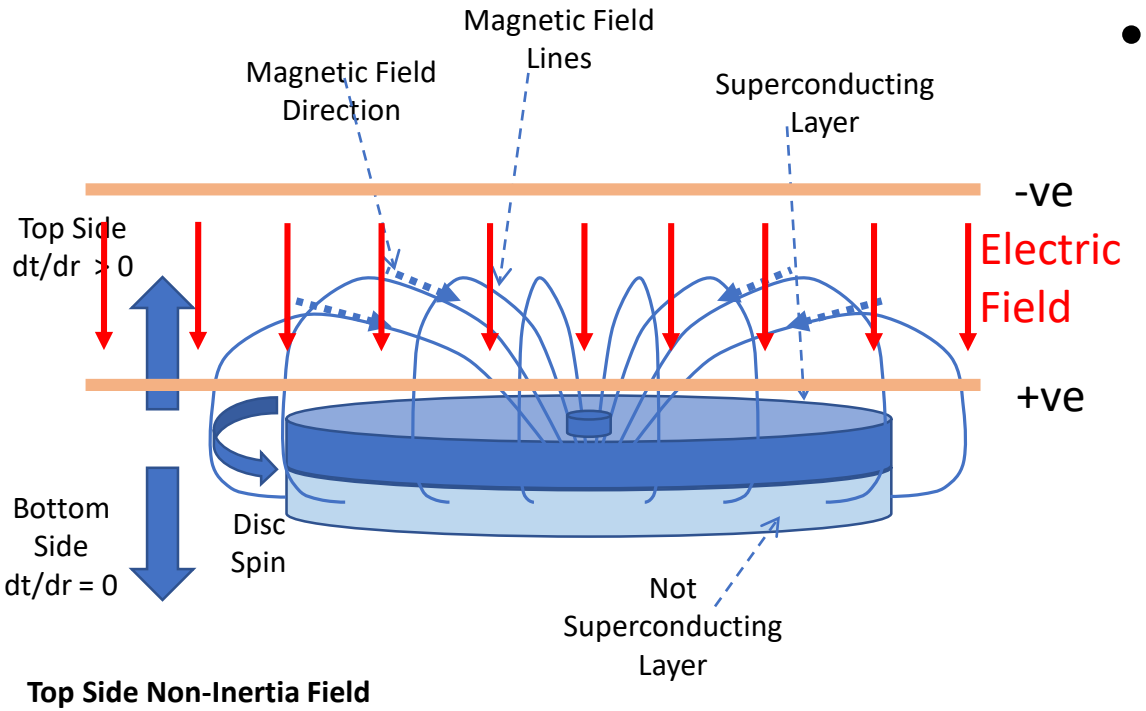
Principles: Asymmetric Fields



Top Side Non-Inertia Field

- Podkletnov
- Bilayer magnetic disc
  - Top is superconducting
  - Bottom is not
- Magnetic field
  - Top field: exposed to electric field
  - Bottom field: hidden from electric field

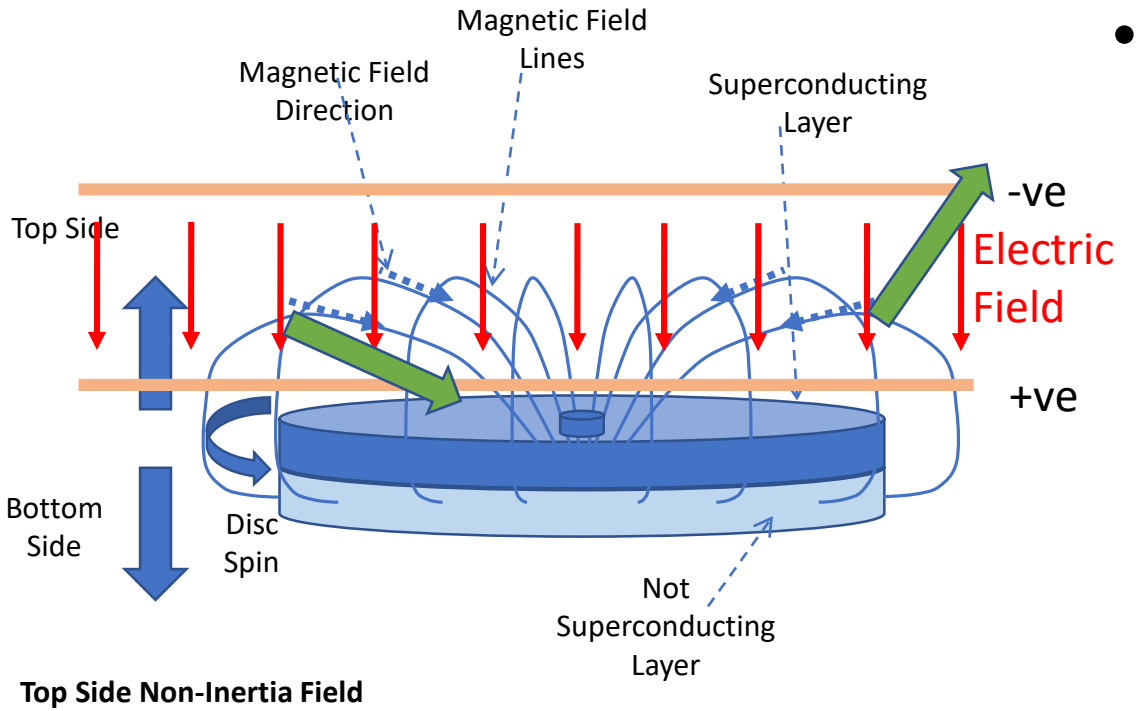
Principles: Orthogonal Fields



Top Side Non-Inertia Field

- Electrode discs
  - Creates an electric field that overlaps magnetic field

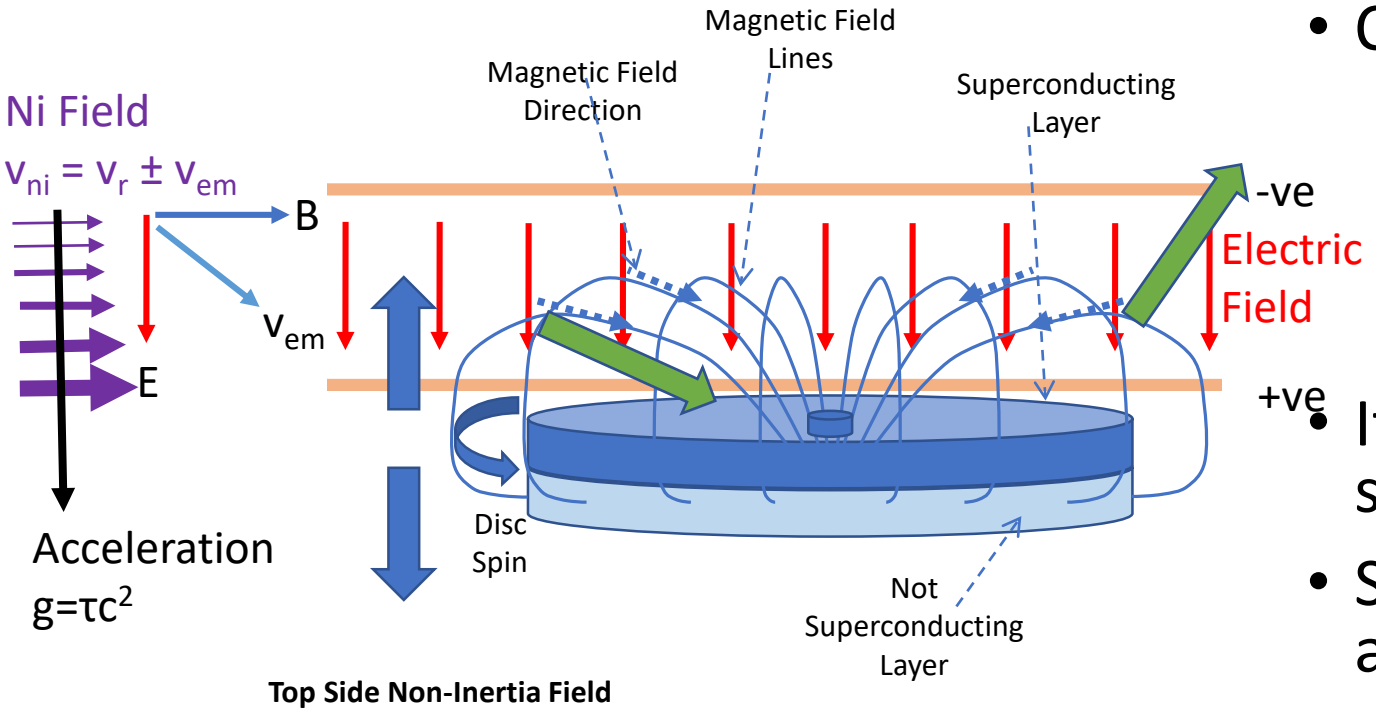
Principles: Electromagnetic Velocity



Top Side Non-Inertia Field

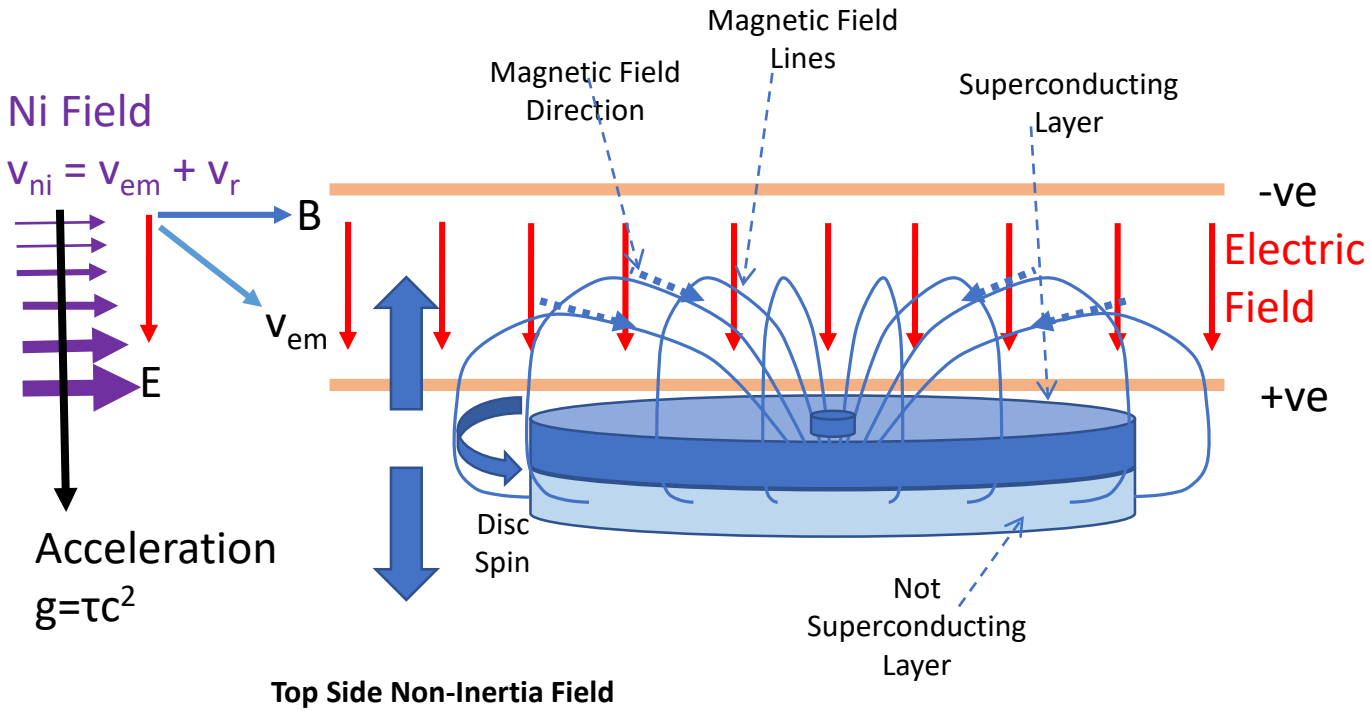
- Rotation of bilayer disc
  - Electromagnetic velocity v_{em}
  - Left Hand Rule

Principles: Spatial Gradient



- Combine
  - $v_{ni} = v_r \pm v_{em}$
  - Mechanical velocity v_r
  - Electromagnetic velocity v_{em}
- If either E or B is reversed the v_{em} sign changes
- Sign does not change if both E & B are reversed
- Take care when constructing

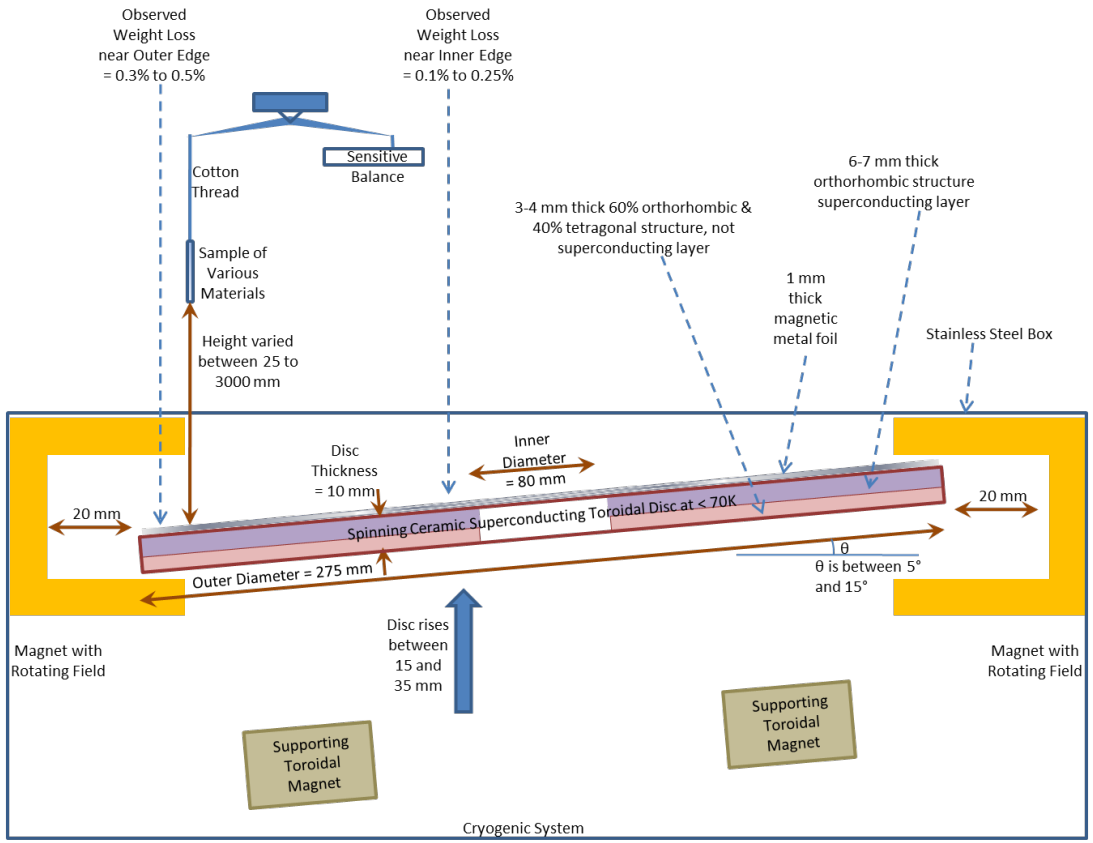
Principles: Spatial Gradient



- $v_{em} = (2\varepsilon_0/m)BEd$
  - Where d = height from magnets
  - m = mass of device
  - ε_0 = electric permittivity

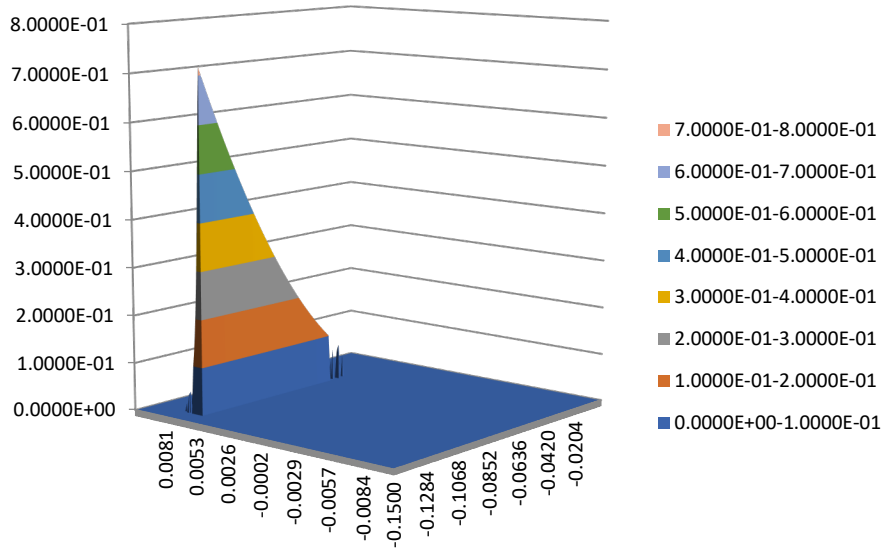
Podkletnov’s Experiments

Podkletnov's Experiment



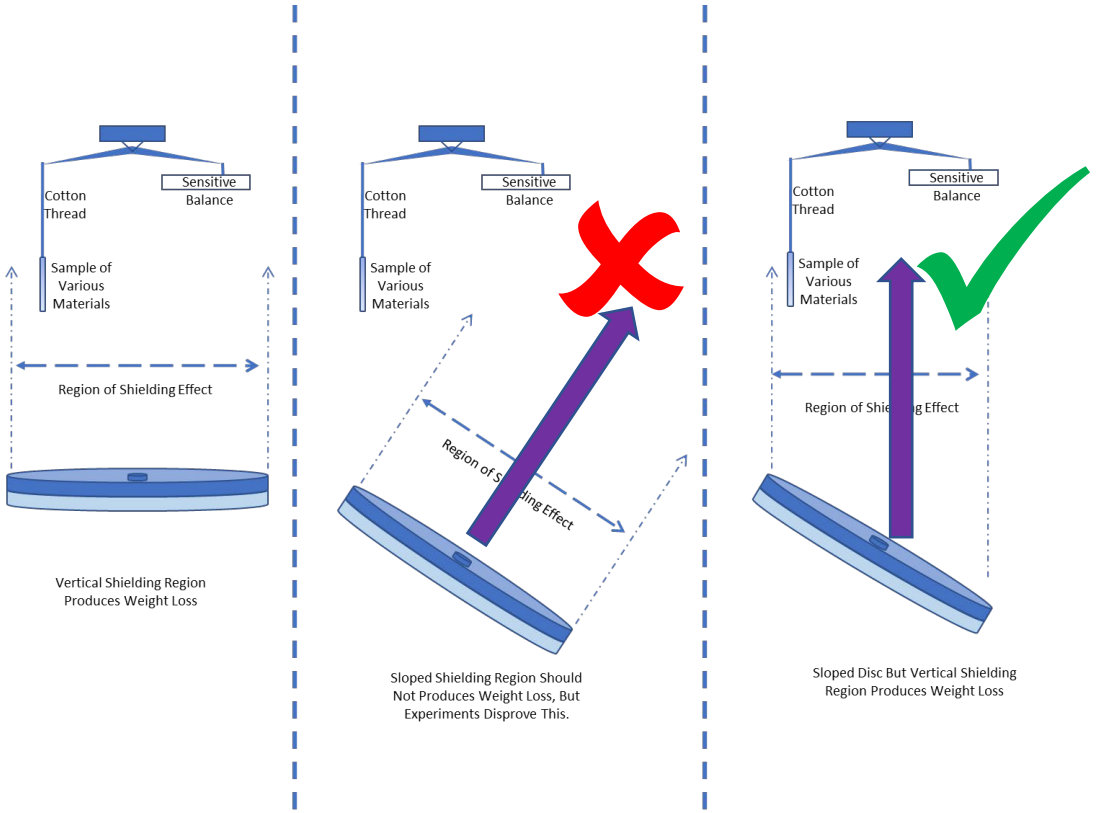
- Observed weight change
  - Weight gain
  - Weight loss
- ≤ 3,000 rpm
- 98g at circumference

Podkletnov's Experiment: Accelerations



- Acceleration increases with tangential velocity

Sloped Shielding Results & Inferences



- Shielding against gravity
  - Independent of slope
- Something to consider when designing prototypes

Chekurkov’s Experiments

Caution

- Dynamic Instability
- Similar to Chekurko's design but has key differences
  - No Electric Field
  - 13,000 RPM
- Conclusion: Need both electric & magnetic fields

Chekurkov's Experiment (i)

https://youtu.be/Z-M55XP3D4A

- Mins 5:09

- Failed experiment
  - Magnets below the disc
  - Where electric field does not overlap magnetic field

Mins 2:32

Chekurkov's Experiment (ii)

https://youtu.be/dJCC1Ks4BJ4

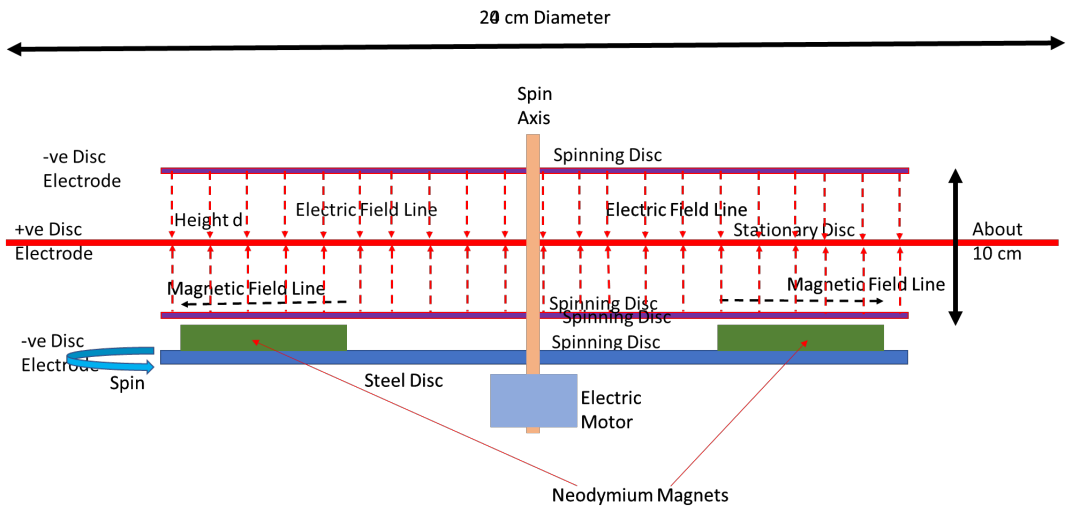
- Successful experiment
  - Magnets on topside of disc
  - Where electric field overlaps magnetic field

Chekurkov's Experiment (iii)

https://youtu.be/i889P5nOwhg

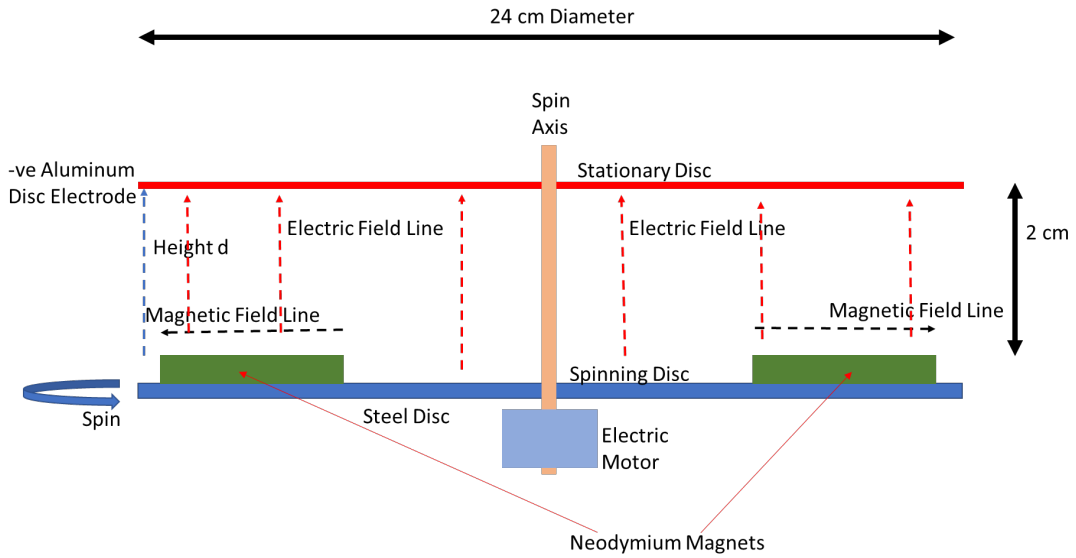
- What do you see?

Chekurkov's Design



- From the perspective of Ni Fields, the upper electric field does not seem to have a function
- Can be simplified to just 2 discs
- Dimensions are approximate based on visual estimation

Simplified Podkletnov-Chekurkov Prototype



- Distance between plates > breakdown voltage distance
- Electric voltage < breakdown
- Lower plate spin: about 1,200 rpm
- Vectoring: vertical Ni field
- Attenuation: electric field

Mathematical Modeling Results

Approximate Models

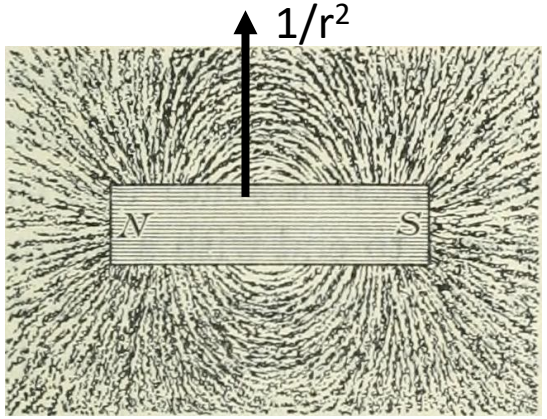
Physical Properties			
Total Engine			
	Engine mass	1	kg
Disc	Radius	0.12	m
	Physical Are	0.04523893	m^2
	spin	500	rpm
		8.33333333	rps
Disc Separation			
	Max Height	0.0500	m
	Min Height	0.01270	m
	Mid Height	0.03135	m
Model Position for g Calculation			
	Delta Separ	0.000314	m
0.03	Max Height	0.001350	m
	Min Height	0.001037	m
Results			
	Force	9.8	N
	Grav: F/area	2.1663E+02	Pa

Magnets	NB057-0-N48		
Physical Properties			
	Length	0.0508	m
	Width	0.0254	m
	Height	0.0127	m
	Physical Are	0.00129032	m^2
Field			
	B Strenght	1.42	T
	Mag Momer	2.33E+02	
	Mu/(4pi)	2.326963087	
	Mag Field S	1.5	
	Mag Area	0.00193548	m^2
Typical Magnets			
	Typical High	0.010	T
	Typical Low	10	T
Results			
	acceleratior	970.9736	m/s^2
	Force	9515.54173	N
	Mag: F/Area	1.1062E+07	Pa
	# of magnet	1	

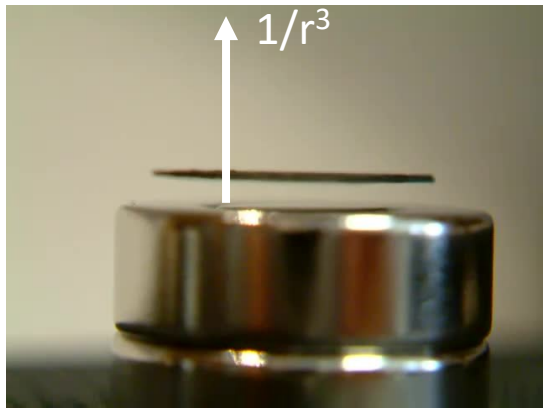
Electrical Properties				
Field				
	Voltage Bet	0	V	
	E Strenght	0.0000E+00	V/m	
EM Calculations				
	2e/m	1.7717867323339826277837249978E-1		
	BE	0		
	(2e/m)BE	0		
	(2e/m)E	0		

- Purpose is to determine a good estimation of parameters
- The results presented are from approximate models
- Models that come close to the experimental design without getting overly complicated.

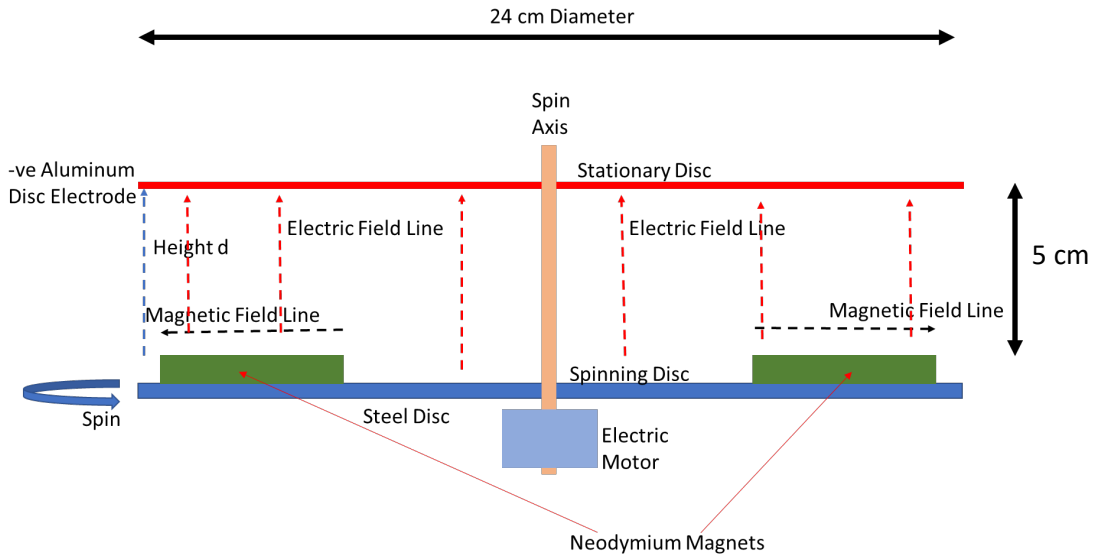
Magnets Field Structure

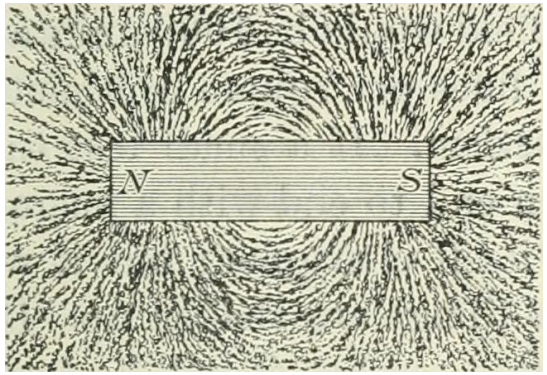


- Magnetic field gradient:
  - Bar: Field gradient f($1/r^2$)
    - Smaller effect
    - Longer “range”
  - Disc: Field gradient f($1/r^3$)
    - Larger effect
    - Shorter “range”



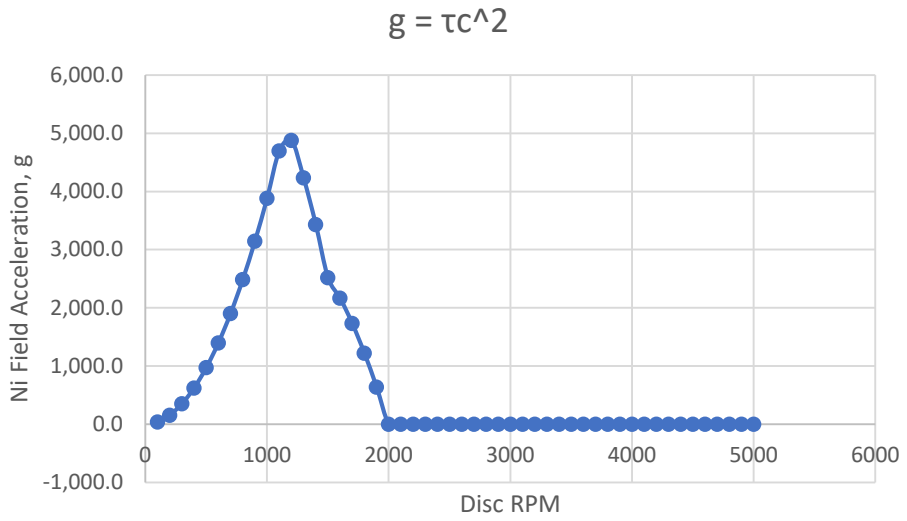
Simplified P-C Prototype: Bar Magnets





- Bar Magnet
  - NB057-0-N48
  - Field B=1.42T
  - Size
    - L=5.08 cm
    - W=2.54 cm
    - H=1.27 cm

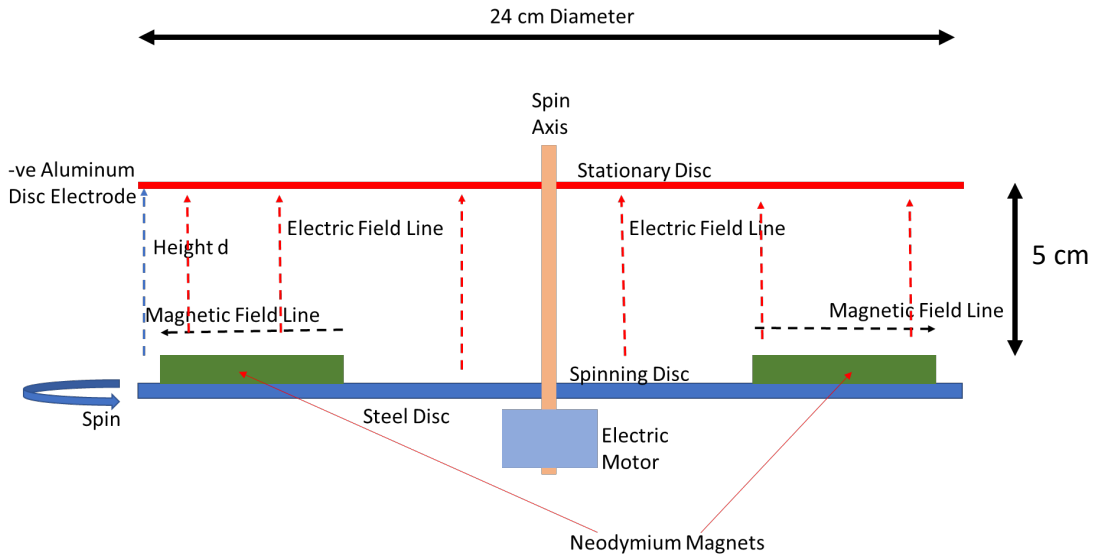
Simplified P-C Prototype: Model Results



5 cm

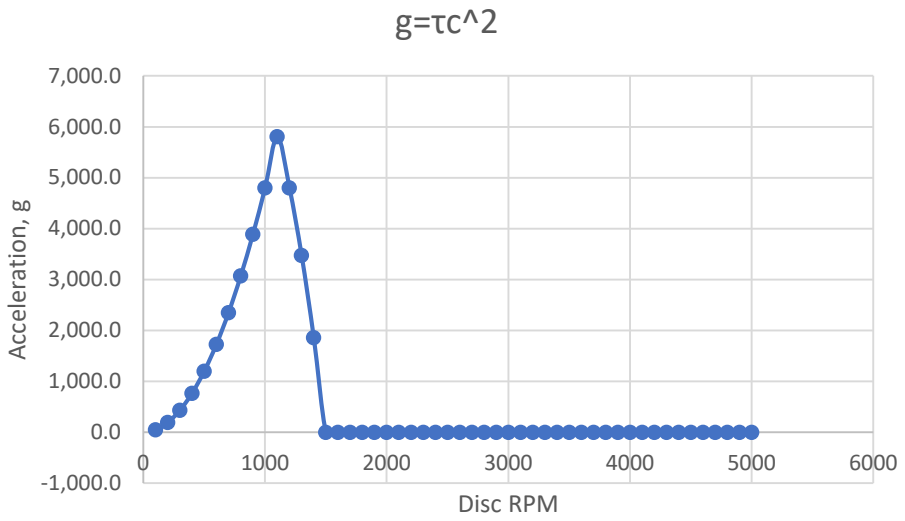
- Bar Magnets
- Maximum effect at 1,200 rpm
- <1,200 rpm spin adds
- >1,200 & <2,000 spin negates
- >2,000 spin overwhelms

Simplified P-C Prototype: Disc Magnets



- Disc Magnet
  - ND001209N (?)
  - Field B=1.42T
    - left the same for comparisons
  - Size
    - D=3.00 cm
    - H=1.27 cm

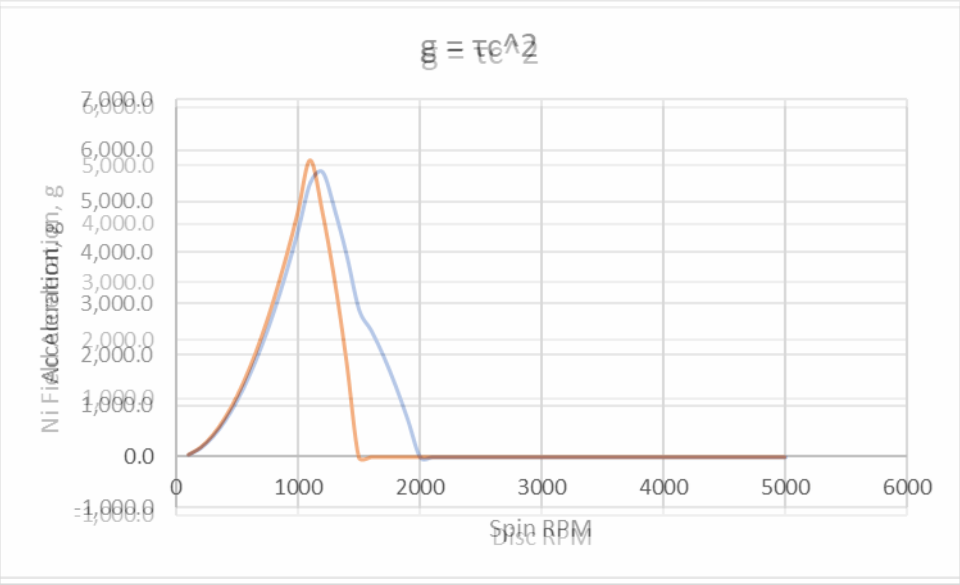
Simplified P-C Prototype: Model Results



5 cm

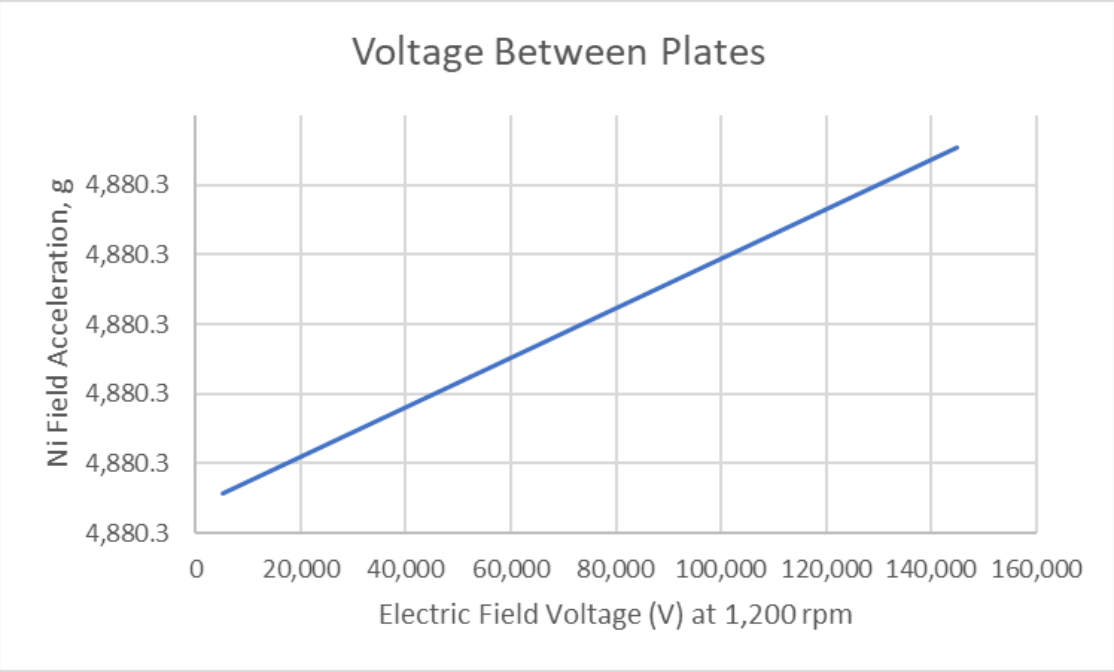
- Disc Magnets
- Maximum effect at 1,100 rpm
- <1,100 rpm spin adds
- >1,100 & <1,400 spin negates
- >1,400 spin overwhelms

Comparing The Two Results



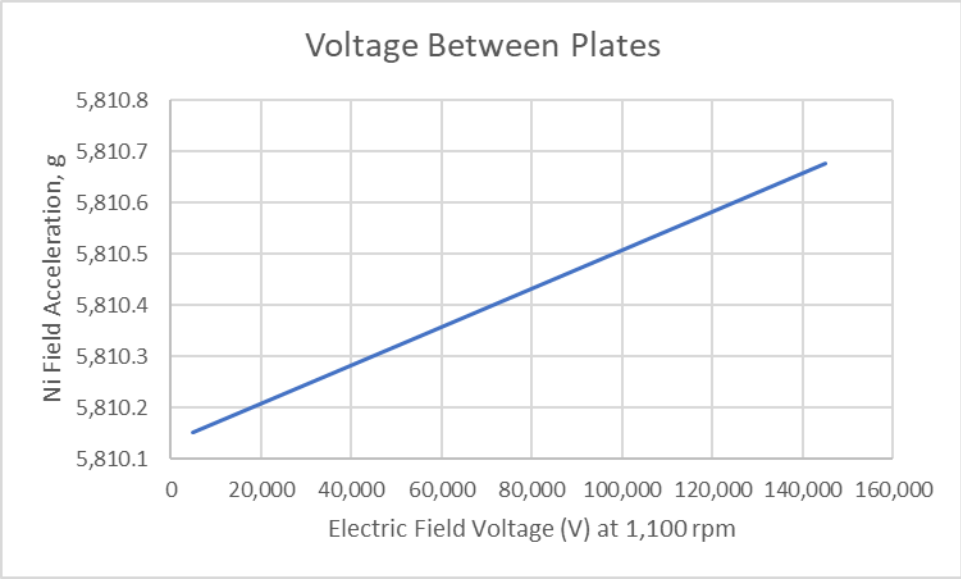
- Bar Magnet = blue
- Disc Magnet = orange

Sensitivity to Electric Field (Bar Magnets)



- The sensitivity is nominal!
  - With DC field
  - Question of power delivery through electric field

Sensitivity to Electric Field (Disc Magnets)



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MS Excel Models using XNumbers

Physical Properties			
Total Engine			
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Disc	Radius	0.12	m
	Physical Are	0.04523893	m^2
	spin	500	rpm
		8.33333333	rps
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	Max Height	0.0500	m
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Typical Magnets			
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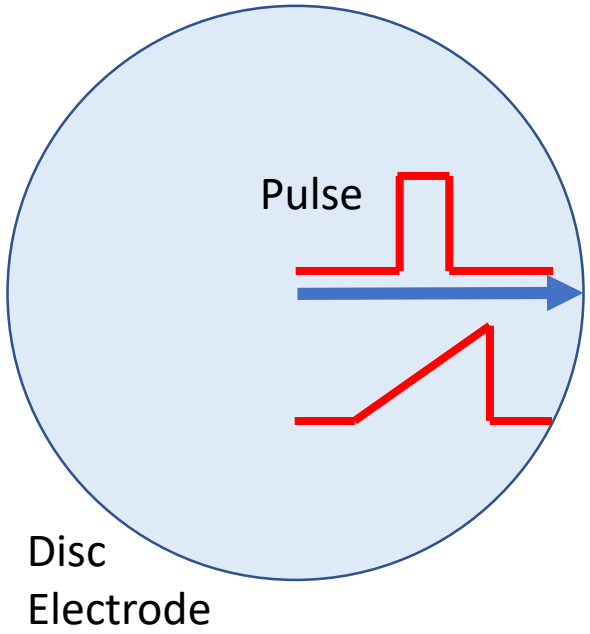
Results			
	acceleratior	970.9736	m/s^2
	Force	9515.54173	N
	Mag: F/Area	1.1062E+07	Pa
	# of magnet	1	

Electrical Properties			
Field			
	Voltage Bet	0	V
	E Strenght	0.0000E+00	V/m
EM Calculations			
	2e/m	1.771786732333982627783724997 8E-1	
	BE	0	
	(2e/m)BE	0	
	(2e/m)E	0	

Xnumbers AddIn for MS Excel can be found at, http://www.thetropicalevents.com/Xnumbers60.htm

- Models:
  - Given free to attendees
  - Explanation on how to use provided during this session
- Bar Model: http://www.iseti.us/GMT/GMS(2020-01-07)01-Bar.xlsm
- Disc Model: http://www.iseti.us/GMT/GMS(2020-01-07)01-Disc.xlsm

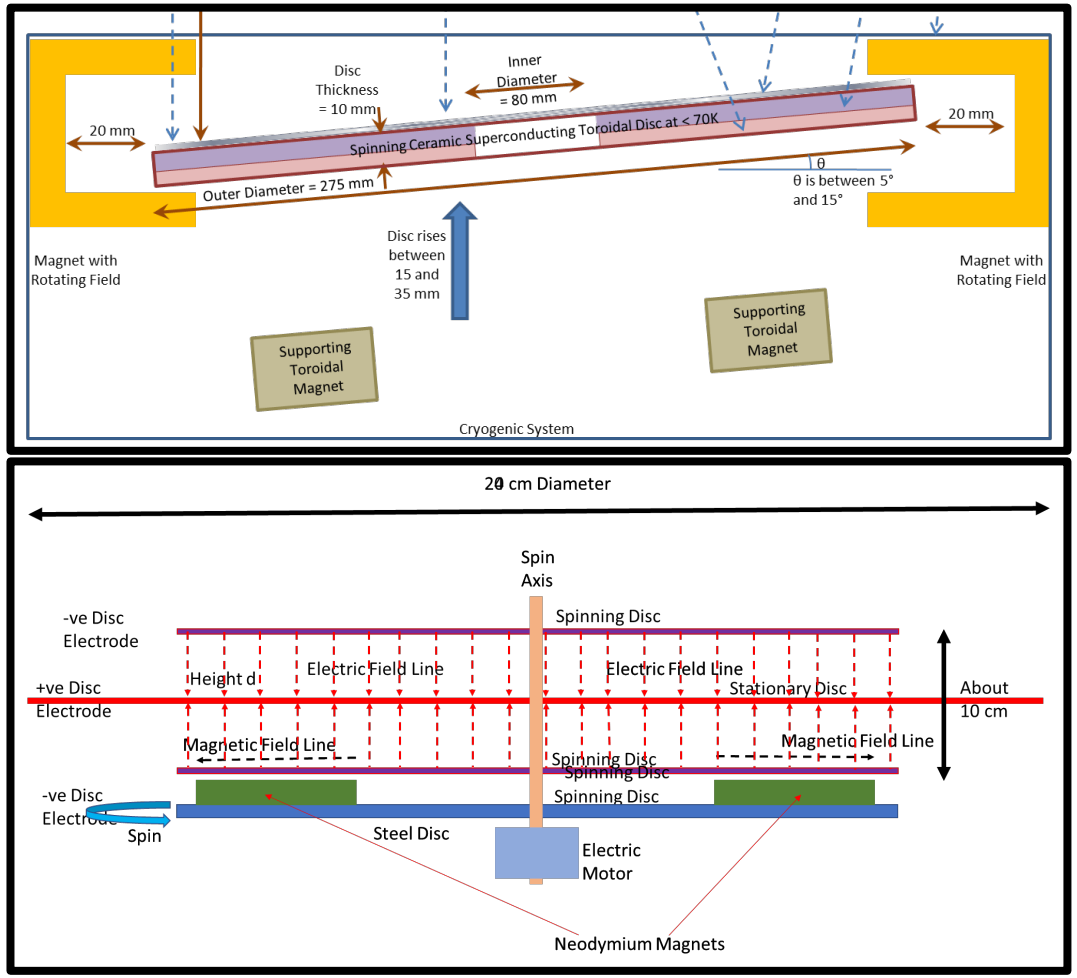
How is power delivered?



- Any suggestions
  - Electric field
  - Pulsed?

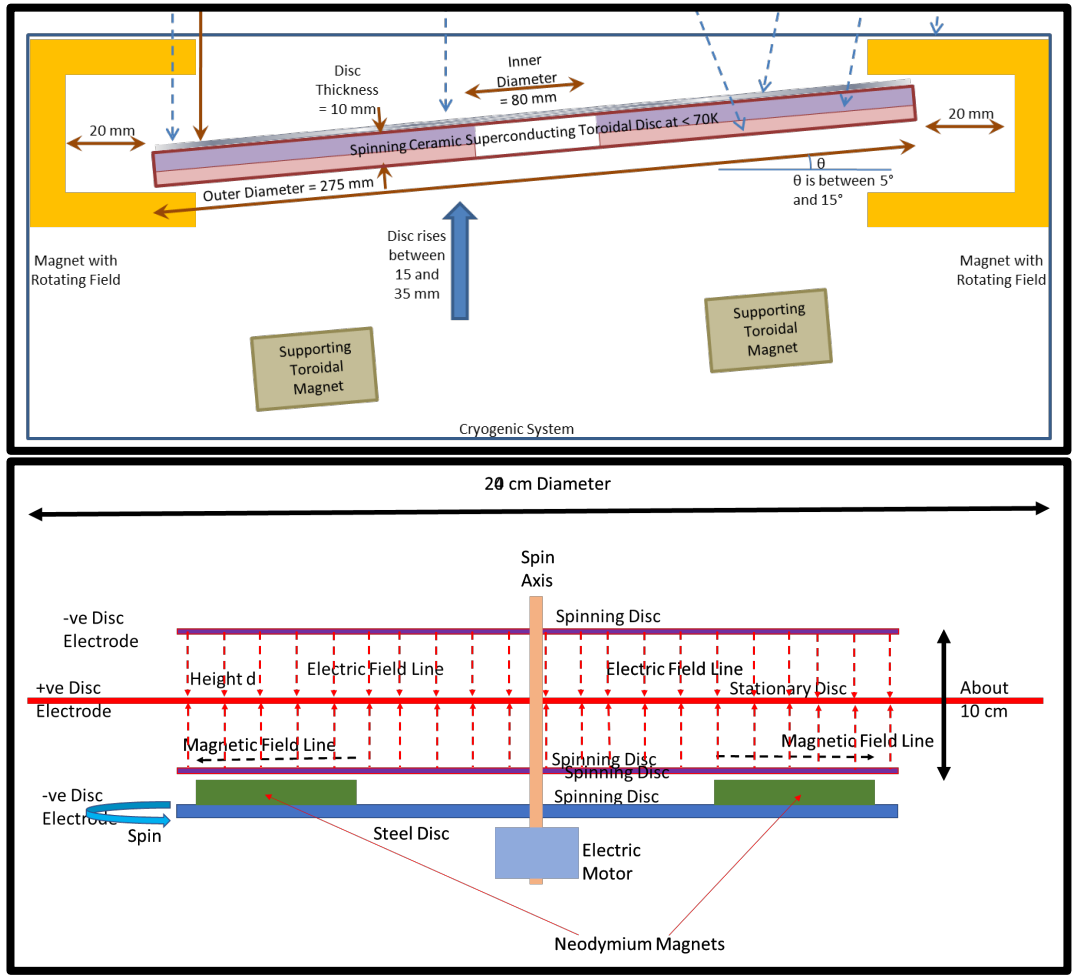
Comparisons & Final Design

Motion Differences



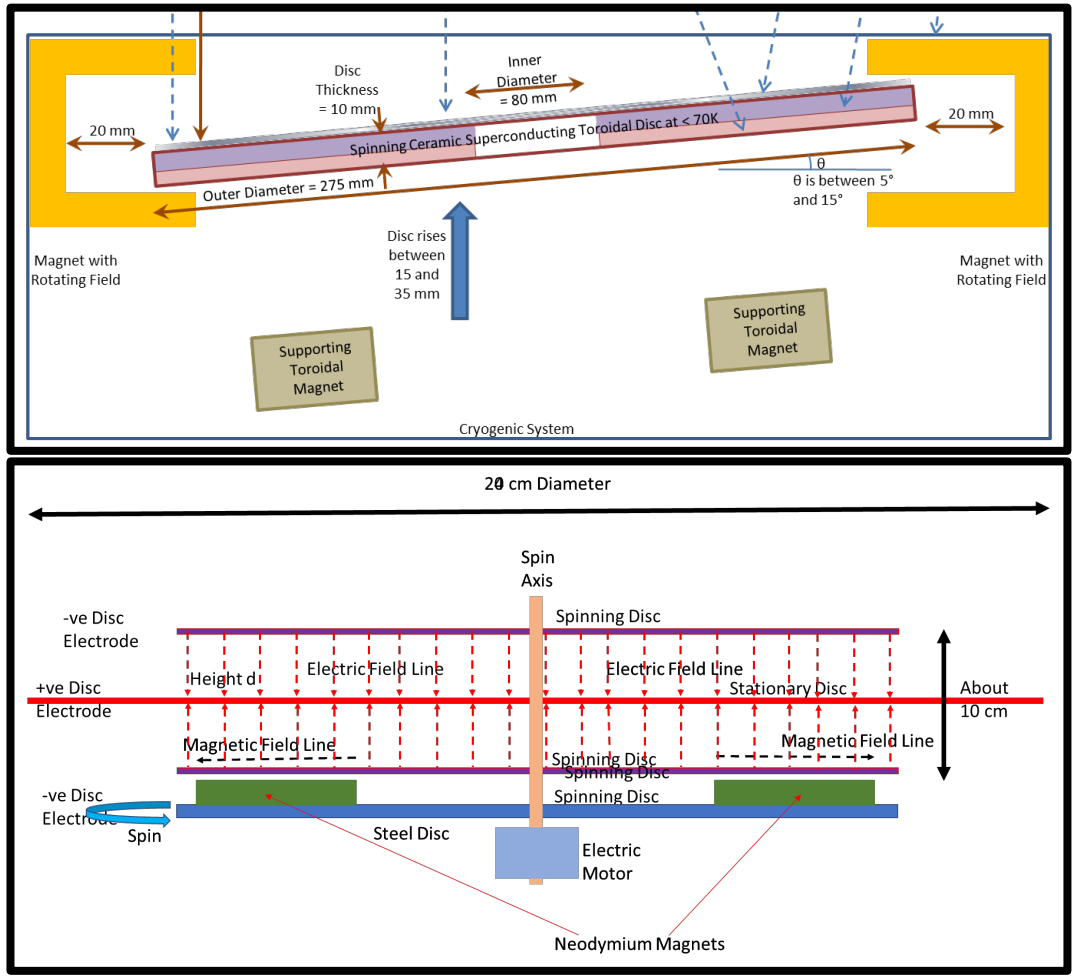
- Podkletnov
  - External frame is fixed
  - Does not lift – weight test is above
- Chekurkov
  - Middle disc is stationary
  - Lifts off the ground
  - Top disc counter rotates with bottom disc – dynamic stability (https://www.youtube.com/watch?v=i889P5nOwhg&feature=youtu.be 1 min)

Field Differences



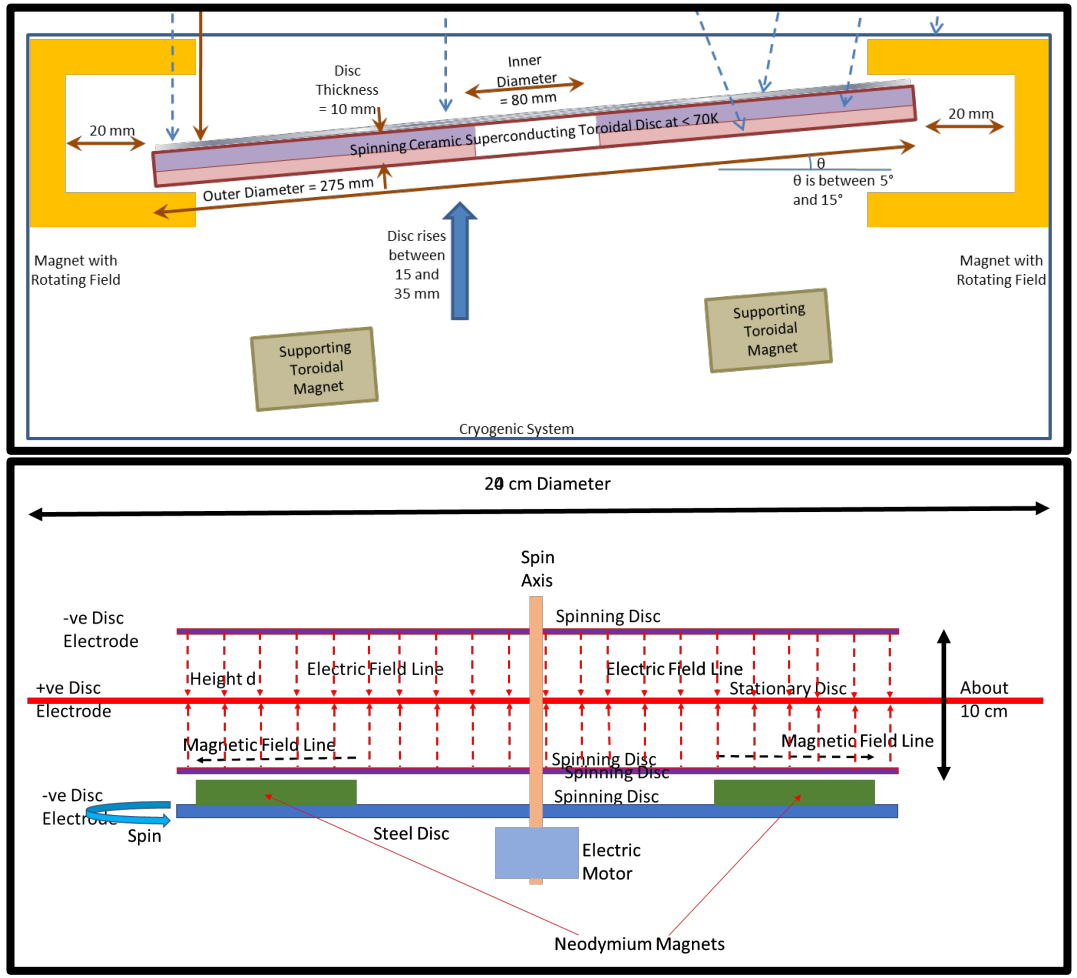
- Podkletnov
  - Electric field not monitored
  - Magnetic field radial from center
- Chekurkov
  - Electric field is pulsed
  - Magnetic field consists of 6 individual disc magnets

Power Delivery



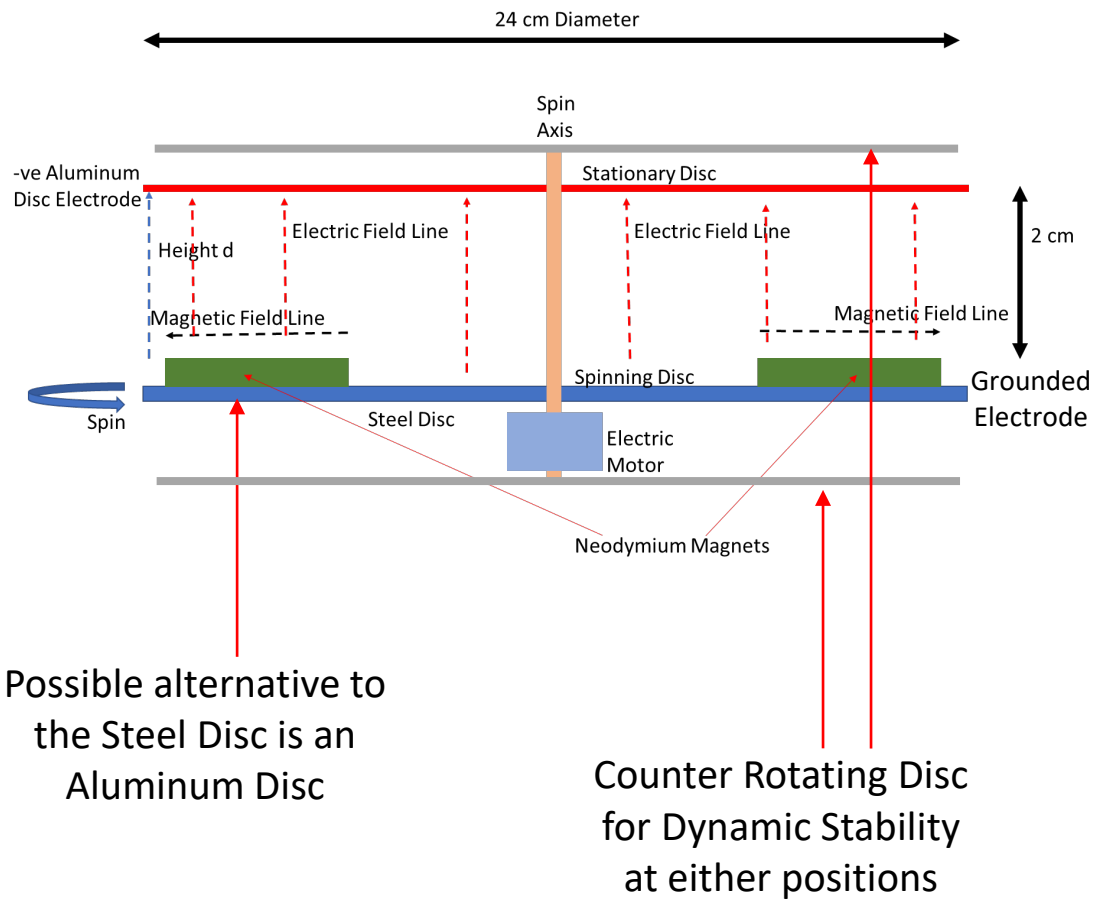
- Podkletnov
  - Not Electric field
  - Magnetic field - possible
- Chekurkov
  - Electric field - possible
  - Not magnetic field
- From rotation - possible

Commonalities



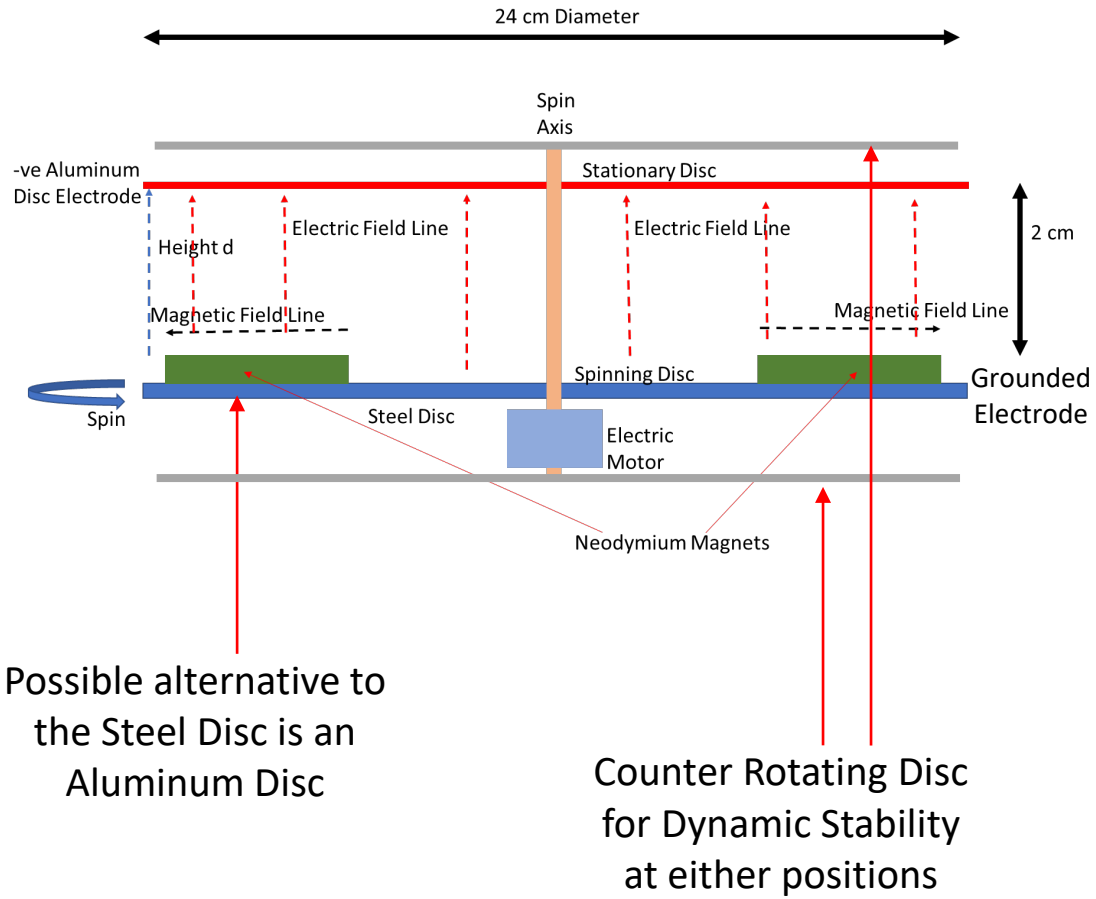
- Top electric field electrode is fixed
- Bottom electric field electrode is rotating with magnetic field
- Magnetic field is
  - Disc magnet
  - Gradient is $1/r^3$
- Power delivered by rotation motors
- Acceleration peaks at 1,100-1,200 rpm

Final Design



- Distance between plates > breakdown voltage distance
- Upper plate fixed
- Lower plate spin: about 1,200 rpm
- Initial voltage: 1,000 – 5,000 V, pulsed but does not change sign
- Magnets: 6-disc magnets (>1T)
- Bottom disc: steel is better
- Power source: Mains

Test for Power Delivery



- The source of power will drain the batteries
- Replace power supply to
  - Electric field with batteries
  - Electric motor with batteries
- Alternatively, test for changes in load

Thank You

Need independent verification of
- engineering design principles
- build prototypes

Contact Information

- ben.t.solomon@outlook.com
- (310) 666-3553