An Introduction to Gravity Modification

An Introduction to Gravity Modification:

A Guide to Using Laithwaite's and Podkletnov's Experiments and the Physics of Forces for Empirical Results

Second Edition

Benjamin Thomas Solomon

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Dedication

To my parents, Dr. & Mrs. Balasundram, who gave me a solid education, taught us about Johannes Kepler, Galileo Galilei and Leonardo da Vinci, to dream, and to persevere, persevere, persevere.

To my wife, Anushka, and son David, who patiently stood by me, while I was doing what everyone said, was impossible.

Acknowledgements

I would like to thank N-Science Corp, Lewis & Fowler, and Colorado Space Business Roundtable for sponsoring my trip to Orlando, FL, where I presented my paper "Non-Gaussian Radiation Shielding" at the DARPA/NASA Ames 100 Year Starship Study Public Symposium.

To thank the many physicist reviewers who reviewed my 2011 Physics Essays paper *Gravitational Acceleration Without Mass & Noninertial Fields*.

To thank the peer reviewed Space, Propulsion & Energy Sciences, International Forum (SPESIF) conferences that provided the platform for my papers from 2009 to 2011. These papers were *An Approach to Gravity Modification as a Propulsion Technology* (2009), *Non Gaussian Photon Probability Distribution* (2010) and *Reverse Engineering Podkletnov's Experiments* (2011).

To thank Glen Robertson & Paul Murad, both of whom vetted & scrutinized my 2009 paper *An Approach to Gravity Modification as a Propulsion Technology* presented and published in the Space, Propulsion & Energy Sciences, International Forum, (SPESIF) AIP Conference Proceedings that would lay the foundations for writing future papers.

To thank the National Space Society (NSS) for giving me the opportunity to present all my papers at the International Space Development Conferences (ISDC), between 2001 and 2007; especially, the New Mexico, California, Texas and Colorado chapters. Now looking back, after having written this book, it is quite clear that many of these presentations could have been much more theoretically robust, but without NSS support it is unlikely I would have reached this far this quickly.

To thank Mike Darschewski, who helped me expand out the analytical/calculus formula to the Local Acceleration Analytical Model, equation (11.5.3) presented in this book, thereby showing that it could not be solved analytically.

To thank the Mars Society, especially the Rocky Mountain Chapter, for providing the opportunity to present my work on the Laithwaite Effect at the 2005 IMS Conference.

To thank the team who developed Foxes' Software per Calcolo Numerico, XNumbers 5.4 a truly remarkable piece of software that

allows normal PCs to evaluate calculations to 250 significant digits.

To thank Palisade's @RISK team, especially Dave Doran and Stan Brown, who provided expertise and time while I worked through the distribution analyses. This powerful tool reduced the time required to analyze distributions from weeks to minutes.

To thank the Dr. Rob Davis, Physics Department, University of Denver, and Prof. Sen & Mr. Tom, Electrical Engineering Department, University of Colorado at Denver, who gave me access to their department labs (2000-2002) to test my circuits.

To thank the many professional who now remain nameless in the distant fog of time (1999-2001) who asked me "have tried…" this and "have you tried…" that, when I showed or talked to them about my experimental results with my proprietary electrical circuits.

To thank the American Institute of Physics (AIP), The American Association for the Advancement of Science (AAAS), and Elsevier Physics Procedia for granting permission, to republish some of the material presented in this book. The entire chapters or portions of chapters are based on my papers that were published/presented in the journal Physics Essays, at the 100 Year Starship Study public symposium, and SPESIF, ISDC and IMS conferences. These include chapters 11, 14, 15, 16 & 17.

Benjamin T Solomon
November 2011
http://www.iseti.us/

Foreword

Benjamin Solomon has stated that "In the process I have placed limitations on quantum theory and shed some light on the statistical nature of particles." This was with regards to his restructuring of the inter relationship of quantum physics with general cosmological models.

This is what I, as a professional physicist enjoyed the most. Let me state why. I believe that Quantum Mechanics is an embedded artifact of a higher level deterministic theory, i.e. much in the same vein as G. t'Hooft, the Nobel prize winner.

In this sense, what Solomon has done is to give a first order approximation as to what Quantum Mechanics is actually a part of which may in its own way shed much needed understanding of the foundations of Quantum Mechanics well beyond the "Pilot model" of DICE 2010 fame (this is a conference on the foundations of Quantum Mechanics and its extension given once every two years in Pisa , Italy, organized by Thomas Elze).

If Solomon is correct, then interstellar travel is possible. It is worth exploring and TESTING. Like all other ideas in the book, this needs a rigorous program of vetting and investigations. But the concepts if verified means that trip to the stars are no longer impossible. Both of these concepts of course need vetting and eventually engineering implementation.

I congratulate Benjamin in completing these ideas and look forward to their realization.

Andrew Beckwith,
Astrophysicist, Ph.D. (Condensed Matter Theory)
November 2011

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Section 1:

Introduction to Gravity Modification as an Engineered Technology

Chapter 1: Changing The Context

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Chapter 1:
Changing The Context

1.1 The Motivation for Writing this Book

Can we change the physics of propulsion? Could the physics of propulsion be a new domain, different from either astronomy or cosmology?

In this book, I investigate the physics of propulsion; with one qualification, that the physics of propulsion is not constrained by conservation of momentum. Not that momentum is not conserved, rather by example of $h/\lambda=mv$, one side of this function is wave and the other side, momentum. Therefore, can one develop a propulsion physics and thereby a propulsion technology that is on the one side momentum and on the other side something else?

This book is not about how relativity, quantum or string theories could have solved the gravity modification problem. That has not happened. It is not about the physics of astronomy or the physics of cosmology. It is about the *new* physics of propulsion that is not constrained by momentum exchange.

It is about how process models in physics did solve this gravity modification problem. This book is the result of my privately funded 12-year investigation into the theoretical and technological feasibility of gravity modification without the use of mass. Yes, both are feasible.

I started this research 12 years ago in 1999, and in 2005 I incorporated all my research into the Colorado company, iSETI LLC (not in any way related to or associated with the famous SETI Institute). 'iSETI' stands for Interstellar Space Exploration Technology Initiative. That is, the objective of my research was to discover the physics and the technology behind gravity modification and interstellar travel. At that time I did not know that both were not the same. Now I know better. Gravity modification is the first step. It will provide *Star Local* transportation. Interstellar travel requires something more sophisticated, which I have named translocation. The concept is not about 'travelling' to your destination but about 'arriving' there.

Some years ago I designed an electrical circuit which I thought had the possibility of creating a force without two characteristics.

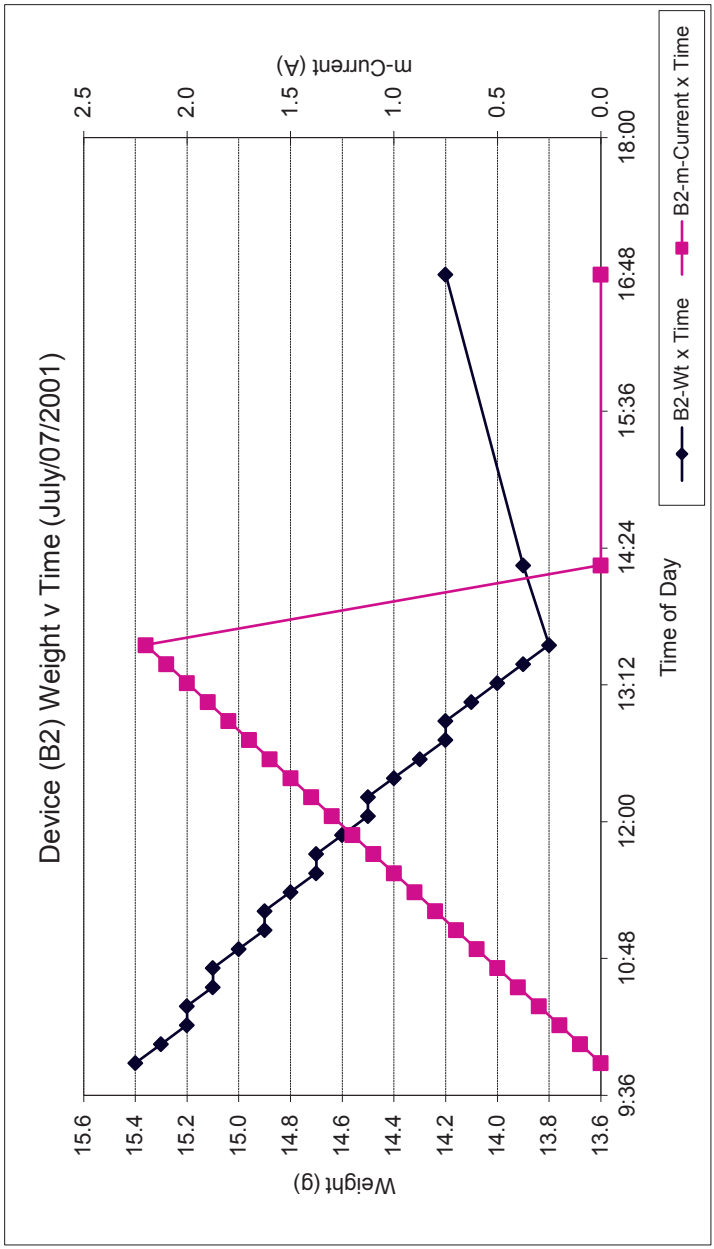

Figure 1.1: First July 2001 experimental results for device B2.

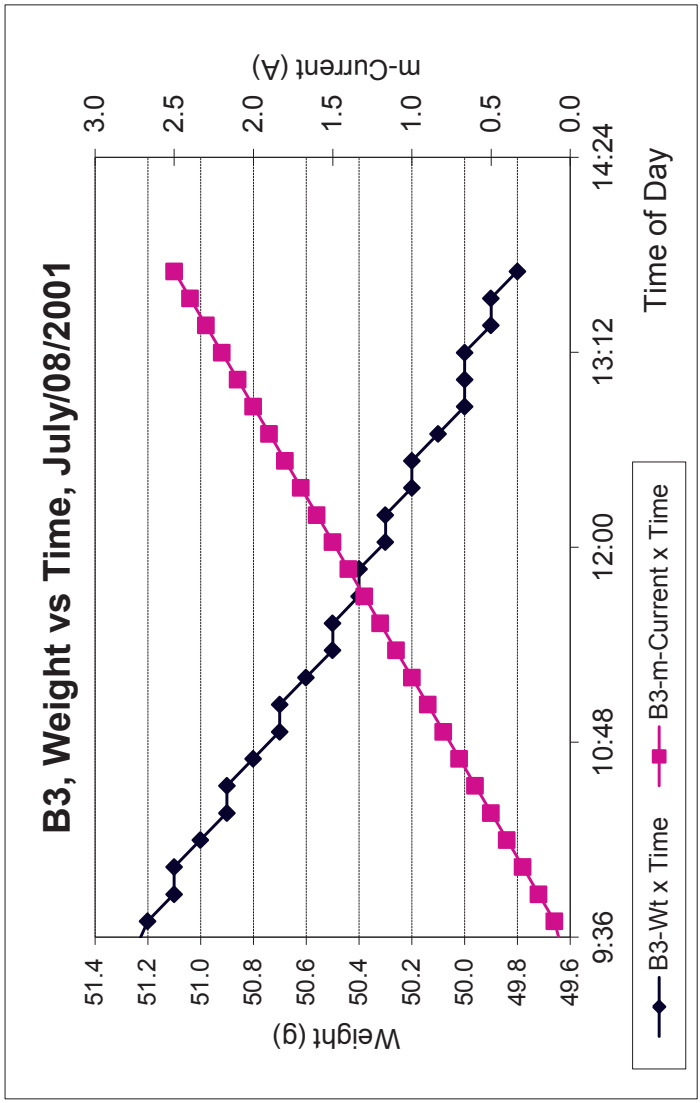

Figure 1.2: Second July 2001 experimental results for device B3.

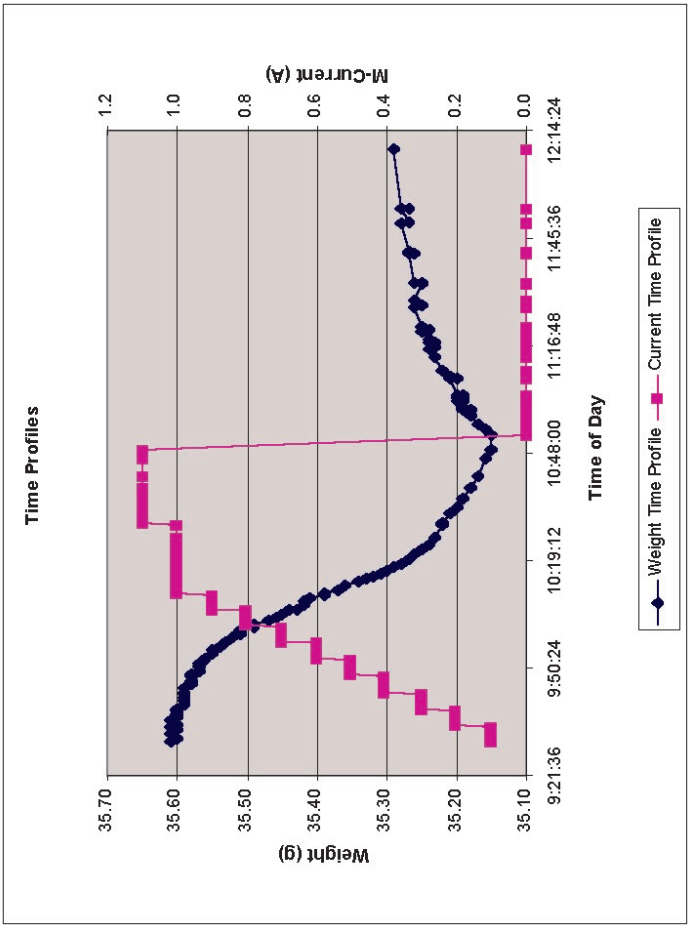

Figure 1.3: March 2000 experimental results showing device A gradually regaining weight after it was switched off.

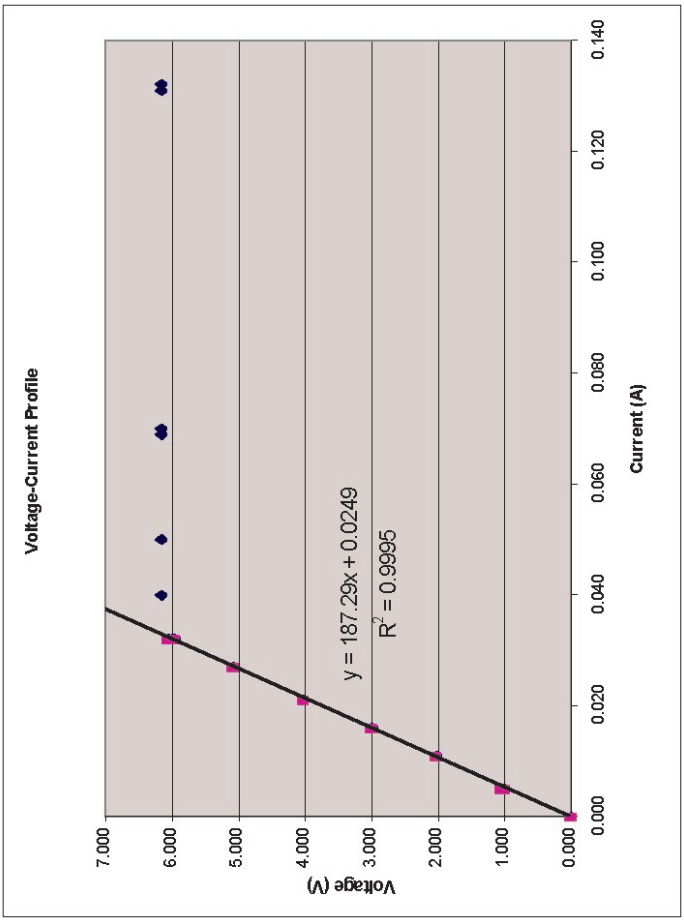

Figure 1.4: March 2000 experimental results for device B depicting apparent room temperature superconductivity - experimental results not yet repeatable.

First, there would not be an equal and opposite reaction. And, second, it would not have moving parts.

I finally got around to experimenting with this circuit design in 1999, and was pleasantly surprised to find that the weight of these proprietary circuits would change as a function of current. These circuits could both increase and decrease their weight by 3% to 5% over several hours. See Figures 1.1 to 1.4. In one instance the circuit lost 98% of its weight instantly for about 30 seconds. This particular device appeared to superconduct at room temperature, Figure 1.4. I have since not been able to reproduce this particular 98% effect, but believe that I have figured out why, when I was investigating Podkletnov's work. This is an engineering problem and not a physics problem. It is about maintaining field stability.

The importance of this circuit, from a theoretical perspective, lies in the fact that it confirms that gravity modification is a 4-dimensional problem. And, that there is a real physical connection between gravity and electromagnetism. Further, it is no longer necessary to device a solution to Podkletnov's work from a quantum theoretic perspective, involving materials structure.

I must confess that in 2001, I ran into a mental block on how to improve these circuits. So in order to figure out the new rules about how things work, I set about to understand what a force is. How is force implemented in Nature? See Figure 1.5 on the approach used. I found I could not stop there. The numerical modeling results caused me to look further, at the possibility of a starting point for a new quantum theory or at least for the boundaries for the old quantum theory, therefore, this book.

One should also note that in pursuing this research, seeking a unification of gravity and electromagnetism was the furthest thing from my mind. I did not attempt to look into the physics of strong and weak nuclear forces. My research focused on answering 4 questions that are not considered important in modern theoretical physics. These are:

1. For the same change in velocities, why is the observed change in wavelength in the Doppler Effect different from that of Gravitational Red/Blue Shift?
2. Why is force orthogonal to both electron velocity and magnetic field?
3. Is there something more fundamental going on that shows up as conservation of mass-energy & conservation of momentum?

4. Can gravity modification be done with only 4 dimensions?

I must add that much of the material in this book is new, original and not a compilation of other researchers' works. Do note, too, that the circuits or their designs are not discussed in this book, as these are proprietary technologies, but I do explain how things work.

I do hope that this book will change the way we get into space - a thousand people at a time, instead of just three or seven; how we explore - manned rather than robotic; where we explore - everywhere instead of just Earth orbits; and put a million people permanently into space by the year 2020.

1.2 Trustworthy Rules

Gödel's Incompleteness Theorem states that if we are prepared to accept that the rules of some such formal system ***F*** are to be trusted as giving us only mathematically correct conclusions, then we must also accept, as correct, a certain clear cut mathematical statement G(***F***), while concluding the G(***F***) is not provable by methods of ***F*** alone (Penrose 2004, 377).

Gödel tells us that whatever rules of proof we have, if we accept these rules as trustworthy (i.e. we cannot derive falsehoods), then we have access to other mathematical truths not previously available to us, provided these rules are not too limited.

Penrose uses Gödel's theorem to state that new theories can be derived from old ones provided all the rules are *trustworthy*. The question then arises is how do we define *trustworthy*. From the perspective of relativistic research and quantum theory, the answer is obvious. These rules are trustworthy because they provide the correct answers. This is absolutely correct, but in my opinion insufficient.

Relativity and quantum theory have been trustworthy because they have provided correct answers, and I might add, much more than anyone thought possible. They are insufficient, because we have not been able to derive gravity modification or interstellar travel technologies, assuming of course, that these technologies are feasible.

Therefore, from the perspective of these future technologies our rules on gravity and quantum phenomena are not *trustworthy*. In this book I have changed these trustworthy rules.

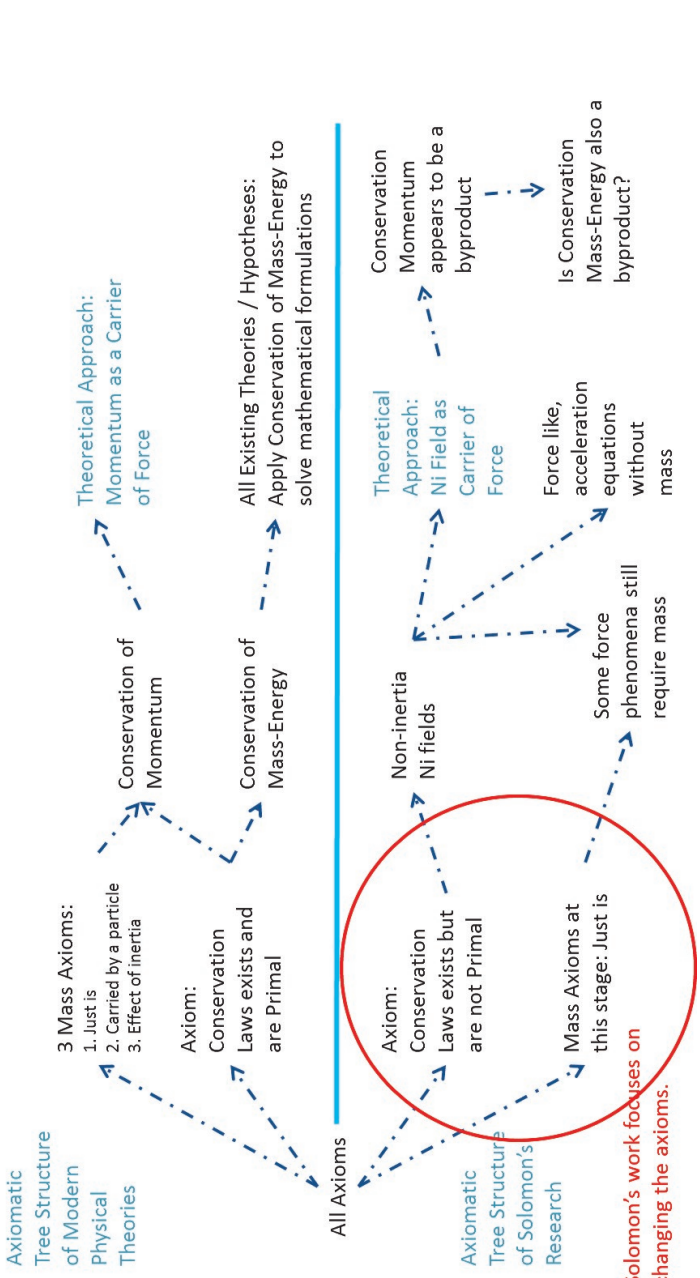

Figure 1.5: The approach used to developing gravity modification physics compared to conventional physics.

Put it another way. If a hundred thousand of the brightest minds in physics, these past hundred years, have not been able to solve the gravity modification problem, using relativity, quantum or string theories, then why should I use these theories? Einstein said it better, one cannot keep doing the same things and expect different results.

1.3 Scope of this Book

This book is a compilation of more than twelve years of research into an alternative approach of how gravity, force, velocity and acceleration are realized.

The objective is to provide a platform of concepts, formulae and the engineering that will facilitate the development of real gravity modification technologies, in a consistent and robust manner. Do note that a single innovative concept by itself is insufficient to foster research into gravity modification as there are many laws, and properties that need to be challenged and/or expanded upon.

All modern theories, including relativity, quantum & string theories have one rule in common. That the laws of conservation of mass-energy and momentum be applied to solve their respective equations. Let us take a leaf out of string theories. Except for this rule string theories suggest that there are millions of possible variations in the physical laws of Nature. Let us take a different approach just for discussion, with the view that this may lead to something that is fruitful, too. In this different approach, Figure 1.5, one could hypothesize that the laws of conservation of mass-energy and momentum are built into Nature such that one should not need to use these two laws to solve theories, and going down this line of thought, that theories should allow one to derive these two laws.

Prof. Philip Bourke of the University College Dublin, Ireland, used to say that 'the academics would ask "Fine if it works in practice, but does it work in theory?" while the practitioners would ask "Fine if it works in theory, but does it work in practice?"'. I address both questions in this book.

This book lays the foundational groundwork on how gravity modification can be approached, and physically realized. To this end, the new platform of concepts, Non Inertia Ni Fields, Continuity of Frames of Reference, Unison Transformation, Momentum Exchange Bypass, Asymmetrical Transformations, and Properties