Comprehensive Advanced Aerospace Program Utilizing
ECE-Theory & Technology

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Alpha Institute for Advanced Studies
Coat of Arms

Executive Summary

The idea that "*the upper limit of possible velocity is the speed of light c* ", has come under question from time-to-time. The idea (*of c as the maximum velocity*) was proposed by Einstein, in his 1905 Theory of Special Relativity. . A reasonable postulate is that any events/phenomena (manifesting in excess of c) would appear distorted or ambiguous if observed via electromagnetic radiation. Further, the additional postulate that c i*s not* a limiting velocity, does not invalidate Special Relativity. It might, however, question Einstein's original interpretation of his theory. Most importantly, the Einstein-Cartan-Evans (ECE)-Theory has generally replaced Relativity as the fundamental construct of cosmology. The ECE-Theory has many significant, and highly beneficial ramifications. Chief among these is the proof that both electromagnetism and gravitation are functionally equivalent, and manifestations of spacetime curvature.

Magnetic-levitation (mag-lev) technology is with us today. For example, it is used to power mono-rail trains. Given the equivalence of electromagnetism and gravitation, it has also been proven that the speed-of-light *is <u>not</u> a barrier* to attainable velocities. The proper use of electromagnetic fields can result in the ability to generate propulsion. Such propulsion systems would not be constrained by the speed-of-light. This has significant ramifications for space travel (i.e. spacecraft propulsion systems), as well as for Earthbound transportation systems.

This document presents an *aerospace program plan* which exploits the benefits of ECE-Theory. The program would utilize an advanced propulsion system concept, functionally termed "Geodesic-Fall". Achievable geodesic-fall velocities are not bounded by the speed-of-light (c).The potential, of the geodesic-fall propulsion system technology, is enormous. Besides the obvious spacecraft applications, such a propulsion system technology could be applied to planetary vehicles (e.g. the automotive industry). This technology might alleviate several concerns, such as emissions, petroleum-dependency, alternative fuel sources, and aspects of global-warming. Additional information is available. Further discussions are welcome.

Obviously, the aerospace industry, and sectors of the transportation industry would be the primary implementers and users of ECE based technology (*including the geodesic-fall technology*). They, along with organizations such as NASA, would be most able to advance and promote this technology. The Galactican Group (the research & consulting organization that derived the geodesic-fall concepts) feels that licensing the ECE technology will facilitate that advancement. The Galactican Group stands ready (with our AIAS colleagues) to facilitate and promote the utilization and advancement of *ECE-Theory based* concepts & technology.

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Table of Contents

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1. Introduction

Einstein-Cartan-Evans (ECE)-Theory has gained worldwide acceptance and interest, especially during the past five years. Primary interest areas are the design & development of new devices which could provide energy directly from spacetime. These devices have the potential to solve the growing global energy crisis. The importance of ECE-Theory to other engineering & scientific areas (e.g. molecular computing, nano-circuitry, biochemistry, etc.) is also being established. There is interest in ECE-Theory among the aerospace, defense, power, and computer industries. To exploit such interest, particularly that of the aerospace industry, an expanded space-program based on ECE-Theory & technology is presented in this document. Initially, the program proposed herein could be viewed as an expansion of the current National Aeronautics & Space Administration (NASA) space program.

The projected audience for this document includes NASA, the aerospace industry, and various governments currently involved in aerospace efforts.

This program would be international, and have revenue producing aspects. Major program efforts would eventually evolve to the global commercial sector, and thus be market-driven. Eventually, the program would not rely primarily on direct government funding, but on its own revenue producing capabilities. It could help solve the global financial crisis. This issue is discussed in section 2, below.

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2. Program Objectives

The technology here described has the potential of alleviating or mitigating several of the more pressing problems facing the United States and the world. This is the overall objective of this proposed program. The most serious issues that the world seems to be facing are as follows:

A. Climate change and global warming;

B. Worldwide increased demand for energy;

C. Economic downturn and impending recession;

D. Globalization of business activity and its attendant displacement of jobs, and worker-pay inequality;

E. Balance of trade inequality and resulting unsustainable wealth transfers from oil transactions and,

F. Negative health impact of dirty manufacturing infrastructure.

2.1 *Possible Program Benefits*

If the world community were to embrace this new technology in a cooperative and coordinated way, several of the problems enumerated above could be addressed simultaneously. Evaluation of the present and future economic and geo-political impacts would be crucial in any plan going forward.

A change of the magnitude suggested above would inevitably produce initial winners and losers. Entities with an immediate stake in the status quo would lobby to maintain the existing system and try to delay the introduction of anything that would interrupt their revenue stream.

If the economic *Sooth Sayers* are to be believed, we are entering a period in which the world will have to experience some modicum of austerity before positive economic growth is the rule rather than the exception. The era of easy money for business or consumers appears to be over. The worldwide business and financial system seems to be entering a one to two year period of transformation toward a more sustainable, traditional and less risky way of doing business.

2.2 *Some Initial Program Advantages*

The following advantages may accrue from the introduction of this new technology following a period of experimentation, modeling and capitalization:

A. An inexhaustible supply of relatively inexpensive energy;

B. Freedom from the burden and expense of transmitting energy over vast distances or storing it locally before it is needed;

C. Savings realized from lower costs can be used to pay better wages to workers.

It is reasonable to expect that other, as yet unforeseen, advantages might arise from this program.

2.3 *Why A Space-Program?*

Although this proposed program has several aspects, it is presented as a space-program. As such, the program would not be an overt, direct threat to the status-quo (i.e. in-place industries such as the petroleum industry, the power industries). Further, the proposed program could be viewed as an expansion of the current space program, facilitating support from the aerospace and related industries. Such support could be a significant factor in successfully moving forward.

3. Technical Background

The ECE-Theory [1] is a unified field theory which establishes the equivalence of gravitation and electromagnetism. The ECE-Theory is based on differential geometry, and explains how the whole of cosmology can be explained via geometry, in particular Cartan Geometry [2]. Fundamentally, the primary forces of spacetime are curvature (i.e. gravitation) and torsion (i.e. electromagnetism). Torsion is the spinning of spacetime. While Einstein used Riemann Geometry to explain Relativity, the ECE-Theory uses Cartan Geometry (which includes torsion) to describe the dynamics of spacetime. *It is useful to note that gravitation and electromagnetism (torsion) are both manifestations of spacetime curvature, from the perspective of differential geometry*. The ECE-Theory can be regarded as an expansion/generalization of Einstein's Theory of Relativity. Specifically, the ECE-Theory accounts for spacetime curvature and torsion, while Relativity only accounts for the curvature of spacetime. ECE-Theory employs Cartan Geometry to describe the curvature and spinning of spacetime (i.e. torsion).

Utilizing the spinning of spacetime can lead to powerful results, not otherwise achievable. The ECE-Theory explains how, by deriving energy directly from spacetime, such *powerful results* can be achieved. The ECE-Theory's field equations can have the form of resonance equations. An electromagnetic circuit can be structured to go into resonance with the background field of spacetime. This is called *spin-connection-resonance* (SCR). SCR is explained in appendix A. At SCR, electromagnetic energy is amplified, in the form of electric potential energy (i.e. voltage). This amplified energy is available for use. Engineering concepts for devices utilizing SCR are provided in appendix B.

### 3.1 *Considerations from Relativity*

The Theory of General Relativity correctly describes physical phenomena, when observed/measured by electromagnetic radiation. Time can be defined as a property of electromagnetic radiation. Specifically, the propagation process required for light to travel 1cm, can be taken as a unit of time. The behavior of electromagnetic energy propagation (including propagation velocity) depends on the curvature of spacetime. Both gravitation and electromagnetism can be described as manifestations of spacetime curvature. By showing the speed-of-light c to be a function of curvature, one can argue that velocities greater than c do not violate causality. If electromagnetism is the standard of measurement & observation, then physical phenomena manifesting in states at (or in excess of) electromagnetism states, will appear distorted under such measurement. From [3], the Special Theory of Relativity postulates that the speed-of-light (c), is the maximum velocity achievable in our spacetime continuum. A more correct statement, of this result of Einstein's ingenious theory, is that c is the greatest *observable* velocity (i.e. the maximum velocity that can be observed) in our spacetime. This is because c (the natural propagation speed of electromagnetic radiation) is our *basis of observation*. Phenomena moving at speeds ≥ c cannot be *normally* observed using electromagnetic radiation. Objects/matter moving at *trans-light* or *super-light* velocities will *appear distorted* or be *unobservable*, respectively. The "Light Gauge Theory" of [3] defines concepts that remove the speed-of-light (c) as a constraint on achievable velocities, *in normal spacetime*. The speed-of-light (c), which is the speed of propagation of

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electromagnetic radiation, is a function of spacetime curvature. It then follows that, *with sufficient curvature, (c) can be exceeded*, as shown in [3].

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4. Initial Concepts-of-Operation

It has been proven, that electromagnetism and gravitation are both manifestations of spacetime curvature, and *functionally* equivalent. Specifically, the ECE-Theory shows gravitation is the *curvature* of spacetime, and electromagnetism is the *torsion* of spacetime. In terms of differential geometry, torsion can be viewed as a form of curvature. Induced spacetime curvature creates geodesic paths that a vehicle can move/fall along. Thus, a propulsion system capability is realized. The velocity, of the *fall* along the induced geodesic path, is not bounded by the speed-of-light. The velocity constraint is the degree of induced spacetime curvature. The *standard* speed-of-light (c) can be exceeded with sufficient induced curvature of spacetime. Estimates suggest that magnetic field strengths of *10-20 teslas* are sufficient for a 1st system capability. These field strengths are within the capabilities of present technology.

A generic configuration, of a geodesic-fall propulsion system, is illustrated in the figure below. Items M_1 and M_2 are electromagnetic devices. The item (s) represents a generic space vehicle.
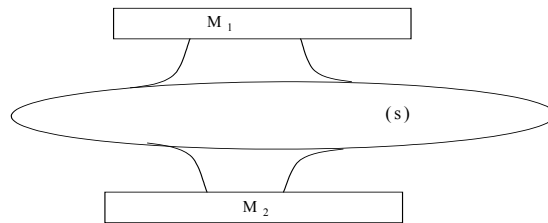
Although this technology is focused primarily as a propulsion system for spacecraft, it can *theoretically* be applied to nearly all vehicles. Applications to the automotive industry might aid in reducing environmental concerns, oil-dependency, and safety related issues. The geodesic-fall technology represents a major departure from conventional approaches to vehicular propulsion. It is an alternative to internal-combustion. This is fundamental, *if* environmental concerns are to be *effectively* addressed. For spacecraft applications, the speed of light is no longer a limit. Practical interplanetary travel (and perhaps interstellar travel) can be within reach.
Gravitation is a manifestation of spacetime curvature. It is shown by the derivation of geodesics in a neighborhood. Gravity and electromagnetism are both manifestations of spacetime curvature. They are respectively the symmetric and antisymetric parts of the Ricci Tensor. The Ricci Tensor is a second order covariant tensor, formed by the

contraction of the curvature tensor β^m_{ikj} , and usually denoted as R_{ij} . It is used to analytically express the curvature of spacetime, in a specified neighborhood, at a specified time. Dynamic spacetime curvature thus could be viewed as an event in spacetime. If said neighborhood is defined as the immediate vicinity of a vehicle (wherein said vehicle possesses a configuration of electromagnetic devices, such that said devices project an electromagnetic field (i.e. bubble), in/about the neighborhood of said vehicle), the vehicle could move/fall along the geodesic produced by manipulating the curvature of said neighborhood. The process is thus called "geodesic-fall". The process of geodesic-fall is to induce spacetime curvature, and fall along the geodesic resulting from said induced curvature. While under geodesic-fall the process continues. At a point i, along the initial geodesic-fall path, curvature is induced forming (the ith geodesic-fall path). Thus, between a point-of-origin p_o and a destination point p_d, the vehicular trajectory is a sequence of geodesic-fall vectors which are bounded by (the initial geodesic-fall vector) and the vector (the final vector of the sequence). ***It should be clear that magnetic forces are <u>not used "directly"</u> to drive the vehicle.*** Utilizing the concepts of ECE-Theory, the induced curvature can be significantly enhanced at SCR [4], appendix A.

A generic geodesic-fall propulsion system is "*functionally controlled*" by the electromagnetic devices M_1 and M_2 . Powering a geodesic-fall propulsion system consists of supplying electric power to M_1 and M_2. By utilizing SCR to amplify the scalar potential (measured in voltage), electrical energy can be derived directly from spacetime. This energy can be fed into M_1 and M_2 . Thus a continuous power source is available to a geodesic-fall propulsion system. This concept is detailed in [1], [4], and [5; sec 4.3.1].

From the above discussions, it is conceivable that a geodesic-fall propulsion system could be configured to be powered directly from spacetime. This possibility could greatly enhance the efficiency, cost-effectiveness, and application spectrum of the overall geodesic-fall process, by providing a *naturally occurring*, *continuously available* power source. This would eliminate conventional electric power generation requirements & constraints from geodesic-fall. Fundamentally, the equivalence of electromagnetism and gravitation is shown in [7]. In [1], the overall constraints of Relativity are generalized to the more comprehensive ECE-Theory. This leads to several significant ramifications [4]. Principle among these, from an engineering perspective, is the removal of the speed-of-light (c) as a constraint on achievable velocities. The geodesic-fall process exploits these principles, using controlled electromagnetism to induce spacetime curvature, which can result in propulsion. This propulsion method/process is not constrained by (c). The geodesic-fall propulsion technology offers the ability to exceed the speed-of-light, *in <u>normal</u> spacetime*. No exotic matter, hyperspace, black-holes, or other such conundrums are involved.

5. Program Structure & Issues

To efficiently and effectively utilize the Geodesic-Fall concepts & technology, we look to the space program. The Geodesic-Fall propulsion system concept offers an interplanetary (and possibly an interstellar) capability that can achieve velocities greater than light speed (c). As discussed above, the only constraint on Geodesic-Fall velocities is the amount of induced spacetime curvature that a vehicle can produce. Thus, programmatically, a modernized space program could be divided into segments. Initially, four program segments are suggested. They are as follows;

> --- Interplanetary Program Segment
> --- Orbital Program Segment
> --- Energy Program Segment
> --- Administrative Program Segment

Obviously, these four primary segments can be divided into sub-segments, as mission, geo-political, and funding factors dictate. However, the focus of this document is the above primary segments.

5.1 *The Interplanetary Program Segment*

This segment would be the primary area of utilization of the Geodesic-Fall propulsion system technology. The focus of this segment would include;

> --- construction & operation of interplanetary ships/vehicles
> --- construction of Geodesic-Fall propulsion systems
> --- research & development efforts focused on;
> > --- advanced Geodesic-Fall propulsion system
> > --- advanced power/energy generation
> > --- spaceship construction methods & technology
> > --- space medicine involving deep-space operations
> --- deep-space mission planning, operations, and support
> --- liaison with other program segments

The construction aspects, of this segment, would require an expanded workforce. Thus, job creation might be realized, on a relatively large scale. The capability to produce energy directly from spacetime [1], [4], would result in significant cost reduction all around. It could also lead to major benefits outside the space program, such as an end to oil dependency.

5.2 *The Orbital Program Segment*

Fundamentally, the Orbital Program Segment would be an expansion of the current NASA space program. The NASA program would be retooled, where practical, for Geodesic-Fall propulsion and SCR type energy generation.

The current space program is focused on orbital operations, including satellites, space stations, and *planetary orbit* type operations. Available technology dictates this limited focus, using the principles of ballistics and orbital mechanics. For example, the

lunar probes and the Mars probes were all ballistics-based. Under the program proposed herein, these extra-orbital/interplanetary operations would fall under the Interplanetary Program Segment, and utilize Geodesic-Fall propulsion instead of ballistics.

Generally, nearly all of the current efforts underway and/or projected (for the current NASA & military space efforts) could be expanded under the program proposed herein. Operationally, a Geodesic-Fall propulsion system powered interplanetary or interstellar ship would achieve orbit status at its destination. Then, the technology of the Orbital Program Segment would come into play, for operations between orbit and planet surface.

Immediate objectives for this program segment could focus on the next generation of the space-shuttle, and expansion of space-station capabilities. SCR type power generation could be a primary focus. Dependence on conventional rocket-fuel could be reduced, and significant cost savings realized. Benefits to the transportation industry could also follow. Additionally, a sizable portion of the transportation industry could be realigned to support the Orbital Program Segment. *This could serve as a market-driven economic stimulus for the troubled transportation industry, including the automotive industry which is in sever economic crisis*.

5.3 *The Energy Program Segment*

The objective of the Energy Program Segment is to provide the technology to power the operations of the Interplanetary & Orbital program segments. Thus, the Energy Program Segment would have a sizable R & D component. The focus of the R & D component would be the development of new & improved energy sources. The operational components of this program segment would focus on testing, optimization, and technology-transfer to the Interplanetary and Orbital program segments. A secondary focus would be technology-transfer to other industries, such as the power-generation industries, and transportation (e.g. automotive) industries.

An example scenario for this program segment would be significant R & D efforts in SCR type electric power generation. This could soon lead to the ability to efficiently generate electric power directly from spacetime for the general public.

With the theoretical and engineering basis established for SCR technology [1, 4, 5, appendices], a well structured R & D effort could lead to quick results. Then a cheap, renewable, unlimited, clean energy source would be available. Technology-transfer to the other program segments could then follow. Thus, energy requirements could be supplied directly from spacetime, significantly reducing operational costs. Additionally, the ability to produce energy directly from spacetime, effectively puts this program into *the energy production business*. Such a cheap, renewable, clean energy product (and its related technology) could be a significant revenue source. It could serve as a major funding source for the space program presented in this document. *It could also become the basis for solution to the energy crisis, to the global economic crisis, and the environmental crisis*.

5.4   *Administrative Program Segment*

The purpose of this program segment is to provide both administrative services and logistics for the other program segments, plus overall program direction. Liaison with industry & governments are also functions of this program segment.

A primary liaison function would be exploitation and marketing of the SCR energy product, and related technology & services. The power industry and the transportation industry could be prime customers.

Logistics functions would include operation & maintenance of a secure virtual-prototyping (SVP)-network capability. This network would include computer-aided-design (CAD) type tools, conferencing capabilities (including video-conferencing), analytical tools, etc. The SVP-network would serve as a design & engineering collaboration medium for the space program. It would present space program engineers & scientists to easily collaborate with each other, and with academic and commercial sectors. This would facilitate effective utilization of the extensive virtual-prototyping capabilities of the aerospace industry.

The security of the SVP-network could be achieved using the technology described in [6]. This technology would render the SVP-network invulnerable to cyberattacks. By making this technology available to the overall information systems manufacturing community, another revenue source (in addition to the possible energy product) could be established. The technology of [6] could conceivably capture a majority of the information security marketplace.

5.4.1   *Program Evolution*

This proposed space program must be adaptive and flexible. To this end, a function of the Administrative Program Segment is periodic evaluation of overall program objectives and direction. This evolution process will help insure that evolving/changing requirements, and changing programmatic factors, are properly addressed.

6. Geo-Political Factors

The technology addressed by this program can solve the energy crisis, and have a significant positive effect on the economic crisis. With practical, cost-effective space exploration as the primary objective, the program proposed herein could produce several beneficial results, including solutions to the current crises. Significantly, the program could be (to a large extent) self-financing as discussed in previous sections. This program would also have significant strategic and international consequences.

6.1 *Some Strategic Consequences*

At this writing, it is speculated that solutions to the energy crisis, offered by this program, will have primary strategic impact. By providing the capability to generate energy directly from spacetime, this program could establish the path *away from* oil-dependency. The removal of oil-dependency could render the Middle East, to some degree, strategically irrelevant. This would greatly expand the range of strategic options for the Western powers. Economically, a reduction in the oil market could initiate redistribution in wealth. Throughout history, this has often been a catalyst for international conflict. However, universal benefits of oil-independence would be realized, by nearly every sector of global society. Thus, the small number of oil-producing countries would be loath to initiate international conflict. The majority of conflict more likely to come from the petroleum industry (i.e. "*Big Oil*"), as they attempt to maintain their market, perhaps at <u>any</u> cost.

6.2 *International Factors*

International participation in this program could serve to dissipate potential geo-political conflicts. In particular, those conflicts caused by (program induced) changing economic factors would have increased probability of *resolution*, rather than *escalation*. It could be argued that international participation is a significant factor for program success. International participation gives said participants a stake in program success.

7.   Conclusions & Summary

The AIAS (Alpha Institute for Advanced Study, www.aias.us) is a worldwide association of interdisciplinary researchers focused on cosmology and the advancement & expansion of the Einstein-Cartan-Evans (ECE)-Theory. The ECE-Theory was introduced in 2003 by Dr. Myron W. Evans. Dr. Evans, our director at AIAS, has correctly stated that the only practical way forward (in advancing ECE-Theory & technology) is to base counter-gravitation devices on spin-connection-resonance (SCR). We at AIAS are convinced that *SCR amplified energy from spacetime* can solve the energy crisis. Such energy is clean, renewable, cheap, and universally available. The program proposed herein will establish this fact.

As a space program, logical *director-organizations* for this effort could be NASA (National Aeronautics and Space Administration), and ESA (European Space Agency). The U.S. Dept. of Defense and NATO participation (in the management of this effort) would depend on evolving global and national security issues. The *director-organizations* would be the conduit for other governments wishing to participate. One mechanism to facilitate such international participation might be a program Board-of-Advisors/Directors. This board could serve in a *program oversight* function. The board would consist of *permanent members* (e.g. England, Germany, United States, France, and Japan) and *term-members* from other participating nations.

Contracts emanating from this program would engage, and draw from most of the *world's industrial base*. As such this program could arguably be viewed as an economic stimulus program that engages a major economic engine, the aerospace industry. This has the potential to establish new technologies, resulting in new industries, new revenue streams, and millions of jobs. This is a low-risk program that can result in a *near term* and worldwide benefit.

7.1 *First Steps*

Obviously, the first steps are to establish the *initial* administrative apparatus for the program. These are arguably the most important phases in establishing such a program. This initial phase would fall mainly to the AIAS, ECE-Technologies, Ltd., and the Galactican Group (G^2). It would entail coordination of some international efforts, such as identifying and securing funding resources, and entering into agreements and contracts with industry and other interested entities.

Initial technical focus would be the Energy Program Segment. Results from this segment would drive the other operational program segments. Also, a new energy/power capability & industry could begin to form, as previously discussed. The establishment of the Secure Virtual Prototyping Tools Network (*SVP-Network*) would also be an initial technical focus. The SVP-Network will require contractor support, especially in on-going operational phases. Another example of a contractor function would be the manufacturing & supply of the security apparatus [6], used for the SVP-Network. From an economic perspective, contractors producing this security device could establish their own superior *information-security market* separate and distinct from this program.

7.2   *Funding Benchmarks*

As discussed herein, this program can be viewed as a relatively low-risk endeavor with a reasonable expectation of an attractive return on invested capital, while addressing the worldwide economic & energy crises. Stimulus packages, proposed by the world's governments, range from tens to hundreds of billion dollars, are high-risk, and focused on bank rescues, bailouts of failing industries, and public-works type projects. All promise limited, if any, return on funds invested. $6.6 Billion has been allocated to the CERN (European Organization for Nuclear Research) for its Large Hadron Collider (LHC) Project. The sole objective of the LHC-Project is to provide additional information on fundamental physics questions, by recreating conditions which theoretically existed moments after *The Big Bang*. However, the concepts and mathematical constructs (on which *The Big Bang Theory* is based) have been proven incorrect, [1] thru [4]. Further, the LHC has broken down, needing approximately $21 Million for repairs, and nearly a year delay to full operational status.

7.2.1   *Rational for Funding*

Using the LHC-Project as a reference point, an equivalent funding of the space-program proposed herein could almost immediately result in the following;

> ---   new energy technology
> ---   new, cheap, clean, renewable energy
> ---   redefinition & modernization of the power industry
> ---   new, *gas independent*, automotive propulsion technology
> ---   comprehensive solution to global energy crisis
> ---   secure information infrastructure (*invulnerable to cyberattack*)

The 12-18 month immediate/near-term period could also begin to approach some mid-term and long-range objectives discussed previously in this proposal. Significant and enduring benefits could be realized for *all* of society. Funding this program with private and/or public dollars in a powerful economic engine (*The aerospace industry*) will have the capacity to mitigate the current crisis, and brighten the economic future of the world.

7.2.2   *Initial Programmatics*

Once requirements for a project (derived from ECE-technology) are received, said project will be evaluated for feasibility. After project feasibility is established, funds would be procured to cover the cost of project specifications, including virtual-prototyping. Following the virtual-prototyping phase, a set of financial/cost projections could be produced.

7.3 *Summary and Outlook*

   The world is experiencing an unprecedented financial and economic crisis, plus a global energy crisis. To address these crises, multi-billion dollar stimulus packages have been proposed in the U.S. and in Europe. Such funds applied to this proposed space program would have low-risk, immediate, long-term, and ongoing payoff in jobs, new technology, and solutions to major problems facing the world. The Aerospace Industry Association has shown that its industry supports over 2-million jobs, more than 30 thousand suppliers (in fifty states and abroad), and is the leading manufacturing export industry ($97 Billion per year). The aerospace industry is a powerful economic engine.

   Viewed as an economic stimulus package, the program proposed herein avoids the high-risk (and slow, *if any*, payoff potential) of bank rescues, and public-works oriented fiscal stimulus packages being proposed by the various national governments. This program establishes a market, enhances existing markets, and provides technologies to serve these markets. This program is a low-risk, high-payoff, market-oriented, economic stimulus mechanism, with potential to benefit nearly all of modern society. This program would engage & expand the *economic engine* that is the aerospace industry. *This economic engine has the strength to lift the economy out of crisis.*

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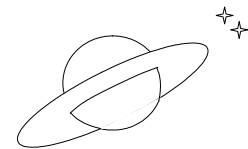**AIAS (UFT posting [64]**

Appendix   A

"Devices for Space-Time Resonance Based on ECE-Theory"
By: Horst Eckardt
AIAS posting 2008

Appendix   B

NOTES