CHAPTER 10

COSMIC NEWSWIRE #10

Relativistic Dark Matter May Solve Big Bang Enigma, Says Astro-Cosmology Author Jerome Drexler

LOS ALTOS HILLS, Calif., Jan. 29, 2007 (AScribe Newswire) -- In a surprising manner, the Big Bang may have satisfied the Second Law of Thermodynamics. An understanding of this phenomenon is helped by an excerpt from Stephen Hawking's earlier tutorial on the subjects of disorder, entropy, the Second Law of Thermodynamics, and the arrow of time[10]:

"It is a matter of common experience that things get more disordered and chaotic with time. This observation can be elevated to the status of a law, the so-called Second Law of Thermodynamics. This says that the total amount of disorder, or entropy, in the universe, always increases with time."

If the amount of disorder, or entropy, in the universe always increases with time, then at the beginning of time the entropy must have been at its lowest level. The Big Bang also occurred at the beginning of time. Therefore, if we accept the Second Law of Thermodynamics, we must also accept that immediately after the Big Bang the entropy of the universe would be at the lowest level it would reach throughout all time.

However, the Big Bang is normally characterized as a chaotic massive fireball explosion associated with a high level of disorder and entropy. We are thus faced with an enigma as to the level of entropy following the Big Bang, but we are not alone.

On November 18, 2004, the University of Chicago published an article entitled "Astrophysicists attempt to answer the mystery of entropy"[11] that contains the following relevant two-sentence paragraph: "But the mystery remains as to why entropy was low in the universe to begin with. The difficulty of that question has long bothered scientists, who most often simply leave it as a puzzle to answer in the future."

If the entropy following the Big Bang had been very low the Second Law of Thermodynamics would have been satisfied, but how could a fiery, chaotic fireball Big Bang explosion have low entropy? This is the enigma that "has long bothered scientists."

Jerome Drexler sees a possible solution to this enigma that would have the Big Bang firing out, in all directions, high-speed ultra-high-energy (UHE) relativistic protons and helium nuclei in a nuclei ratio of about 12:1; In other words, *a violent radial dispersion of relativistic baryons.*

A very high percentage of the energies of these relativistic nuclei would be available to do work in the universe while their entropy, the measure of the amount of their energy which is unavailable to do work, would be very low. Such a Big Bang, characterized by a *violent radial dispersion* of UHE relativistic nuclei, could create an ultra-high usable energy and an ultra-low entropy, and could be designated a *Relativistic Big Bang.*

The temperature of a *Relativistic Big Bang* could be estimated by averaging the kinetic energies of the relativistic protons and helium nuclei. The estimated temperature would be extremely high and probably of the same order of magnitude as the temperature scientists estimate for the Big Bang. Nevertheless, the *Relativistic Big Bang* would have the very low entropy that the Second Law of Thermodynamics requires for the beginning of time.

Some astronomical evidence for a *Relativistic Big Bang* (RBB) comes from the ultra-high-energy cosmic ray (UHECR) protons that bombard Earth's atmosphere every day. The RBB is the most plausible origin of the UHECR's. In Drexler's Relativistic-Proton Dark Matter theory these UHECR's are stragglers from the galaxy-orbiting UHE relativistic protons that form the dark matter streams in the halos surrounding galaxies and groups of galaxies.

It is widely accepted that the mass of dark matter today totals about 83 percent of the mass of the universe and that dark matter was created by the Big Bang. (Drexler's top-down theory of galaxy formation puts this percentage closer to 100 percent during the Big Bang, then during the following 13.7 billion years an estimated 10 to 15 percent of the nuclei attracted electrons and lost kinetic energy and became hydrogen and helium.) Because of this very strong Big Bang-dark matter linkage, strong evidence of the existence of Relativistic-Proton Dark Matter would provide strong evidence for the existence of the *Relativistic Big Bang*. Drexler believes that his 2003[5] and 2006[8] books, his 2005[12] scientific paper, and his 2006/2007 scientific newswires provide very strong scientific evidence for the existence of Relativistic-Proton Dark Matter and therefore for the existence of the RBB.

Cosmological support for a RBB could come via compatibility with, for example, the CMB, or Cosmic Inflation (see Chapters 31 and 34), or the Second Law of Thermodynamics, or the temperatures of the Big Bang, or entropy magnitudes, or the mass values estimated for dark matter particles, or the fact that 83 percent of the universe mass is dark matter. Note that a RBB would be a very efficient way of creating a universe and conserving its energy because the fewest number of particles and the most useful energy would be created and dispersed. These characteristics appear to be especially compatible with Cosmic Inflation theory and its associated Big Bang.

The title of Drexler's December 2003 book is, *How Dark Matter Created Dark Energy and the Sun.* The title of his April 22, 2005, 19-page scientific paper[12] is "Identifying Dark Matter through the Constraints Imposed by Fourteen Astronomically Based 'Cosmic Constituents'".

The title of Drexler's May 2006 book is *Comprehending and Decoding the Cosmos: Discovering Solutions to Over a Dozen Cosmic Mysteries by Utilizing Dark Matter Relationism, Cosmology, and Astrophysics*[8].

This 2006 book provides strong scientific evidence that the dark matter of the universe is comprised of relativistic protons orbiting galaxies and groups of galaxies. This is demonstrated in the book by utilizing the Relativistic-Proton Dark Matter hypothesis, in conjunction with the laws of physics, to derive explanations for more than 15 unsolved cosmic mysteries.

CHAPTER 12

A Relativistic-Proton Dark Matter Would Be Evidence the Big Bang Probably Satisfied the Second Law of Thermodynamics*

Jerome Drexler
Former NJIT Research Professor of Physics
New Jersey Institute of Technology

*This is derived from Drexler's Feb. 15, 2007 scientific paper available at http://arxiv.org/abs/physics/0702132.

Abstract

A new research hypothesis has been developed by the author based upon finding astronomically based *cosmic constituents* of the universe that may be created or influenced by or have a special relationship with possible dark matter (DM) candidates. He then developed a list of 14 relevant and plausible *cosmic constituents* of the Universe, which then was used to establish a list of constraints regarding the nature and characteristics of the long-sought dark matter particles. A dark matter candidate was then found that best conformed to the 14 constraints established by the *cosmic constituents*. The author then used this same dark matter candidate to provide evidence that the Big Bang could be characterized as a *violent radial dispersion of relativistic baryons*, had a low

entropy, and therefore probably satisfied the Second Law of Thermodynamics.

Determining the Nature of the Dark Matter of the Universe

One hundred years ago, Albert Einstein announced the Special Theory of Relativity, which predicted and explained that a proton traveling near the speed of light could have a relativistic mass a thousand, a million, or even a billion times greater than the mass of a proton at rest. (This led the author to conceive his dark matter theory. The idea occurred to him that the gravitational strength of multitudinous galaxy-orbiting relativistic protons moving in the cosmos could create extremely large gravity-related tidal forces on nearby matter, like that exhibited by dark matter.)

Astronomer Fritz Zwicky[1] discovered the presence of dark matter in the Coma cluster of galaxies in 1933. Ever since astronomer Vera Rubin[2,3] confirmed the existence of dark matter halos around galaxies in 1977, cosmologists and astrophysicists have been trying to identify the dark matter particles.

In 1984, scientists[4] developed a Cold Dark Matter (CDM) theory based upon a theoretical uncharged, slow moving particle that they called the Weakly Interacting Massive Particle (WIMP). More recently, it was estimated by scientists that the theoretical WIMP dark matter particles would require a mass in the range of about 35 to 10,000 times[5] greater than the mass of a proton at rest in order to exhibit the observed gravity-related forces of dark matter halos. However, searches for the theoretical WIMP particles during the past 20 years have all come up empty handed.

For this reason, and knowing that Einstein’s relativistic proton easily could meet the mass requirement of the mysterious dark matter particles and that relativistic cosmic ray protons are widely observed, the author has endeavored to determine the nature of dark matter.

The author posits that relativistic protons, orbiting galaxies, have the necessary characteristics of the long-sought dark matter particles, which are estimated by most scientists to comprise 80% to 90%[6] of the total mass of the universe. Relativistic protons do have the required mass and the required difficulty of detection. Protons also can transform themselves into hydrogen, the principal matter of galaxies, by creating muons[7,8] that decay into electrons, then combining with the electrons.

Thus, relativistic protons could form (1) galaxies and their dark matter halos, (2) galaxy clusters and their internal dark matter, and (3) the long, large, filamentary dark matter known[18,47] to crisscross the cosmos [now called the cosmic web].

However, for this proton-based dark matter theory to become widely accepted, there also should be astronomical evidence of relativistic protons within the dark matter halo surrounding the Milky Way. The author posits that the high-energy cosmic ray relativistic protons bombarding Earth's atmosphere every day, from all directions, lend credence toward providing such astronomical evidence.

The author has applied a cryptographic-like analysis for solving the mystery of the identity of dark matter of the universe. Instead of using an encrypted message to extract the secret code it contains as in normal cryptography, the author used 14 cosmic constituents of the universe to extract the nature and identity of dark matter.

The author had speculated that if dark matter represents 80% to 90% of the mass of the universe, dark matter should have roles, functions or an influence on most of the following 14 cosmic constituents. Each type of dark matter proposed by scientists was subjected to 14 elimination tests as follows.

The author asked 14 rhetorical questions: Which type of dark matter (DM) particles could:

1. Form spheroidal dark matter halos around galaxies and DM halos around galaxy clusters?

2. Cause the accelerating expansion of the universe and possibly store dark energy?

3. Be transformed into low-velocity hydrogen, protons, or proton cosmic rays?

4. Create the magnetic fields within and around spiral galaxies?

5. Be concentrated in the long, large, curved filaments of dark matter announced by NASA on September 8, 2004[18,47] [now called the *cosmic web*], which form galaxy clusters where two DM filaments intersect?

6. Create large, mature, spiral galaxies less than 2.5 billion years after the Big Bang?

7. Create spheroidal DM halos having predictable outer and *hollow* core diameters?

8. Provide angular momentum to spiral galaxies and DM halos?

9. Create galaxies without a central DM density cusp?

10. Create a starless galaxy or a Low Surface Brightness (LSB) dwarf galaxy with low star formation rates?

11. Lead to linearly rising rotation curves for LSB dwarf galaxies and to flat rotation curves for spiral galaxies?

12. Form 80% to 90% of the mass of the universe, the remainder being hydrogen, helium, etc.?

13. Ignite hydrogen fusion reactions of second generation stars utilizing hydrogen molecules and dust and ignite fusion reactions of the first generation stars with only hydrogen atoms?

14. Create the first *knee* at $3x10^{15}$ eV, the second *knee* between 10^{17} eV and 10^{18} eV, and the *ankle* at $3x10^{18}$ eV of the cosmic-ray energy distribution at the Earth? (See Appendix B, Slide #17)

After careful study and analysis, the author concluded that galaxy-orbiting relativistic protons would provide many more affirmative answers to the 14 questions than any other known particle. Therefore, Relativistic-Proton Dark Matter could be the identity of dark matter since it appears to have the strongest influence on and relationship with the 14 *cosmic constituents*. This dark matter identification procedure could also be described as utilizing Ockham's (Occam's) razor logic 14 times.

Relativistic-Proton Dark Matter satisfies the three basic requirements of a dark matter candidate. Do such protons have sufficient mass? Yes, relativistic protons can have enormous mass. Have they ever been detected? Yes, relativistic protons bombard Earth's atmosphere every day and are called cosmic rays. Don't relativistic protons move too fast to form small galaxies? The protons can form small galaxies after the protons are slowed down by muon-producing[7,8] collisions and synchrotron emission energy losses, and after the protons combine with the electrons created by the muon decay, thereby forming hydrogen.

Since protons are electrically charged particles, they would be constrained by the weak extragalactic and galactic magnetic fields into extremely large circular/spiral orbits forming dark matter halos around galaxies and dark matter around groups of galaxies within galaxy clusters, and also could be concentrated into long large curved filaments of dark matter. All three of these dark matter configurations have been reported by astronomers.

Much of the above information was derived from the author's May 2006 book[8] and his 19-page April 2005 paper, "Identifying Dark Matter through the Constraints Imposed by Fourteen Astronomically Based Cosmic Constituents"[12], found on the arXiv.gov website as e-print No. astro-ph/0504512.

The author's 295-page May 2006 book, *Comprehending and Decoding the Cosmos*, analyzes an additional 11 cosmic enigmas beyond the 14 derived from his astro-ph paper[12]. Utilizing only Relativistic-Proton Dark Matter theory and the laws of physics, the author explains in a plausible manner all 11 of these recently discovered cosmic enigmas, further supporting the Relativistic-Proton Dark Matter theory.

The author's research has led not only to the identification of the dark matter but also to the discovery of the surprising and significant roles and functions of dark matter in creating the cosmic web, spiral galaxies, stars, starburst galaxies, extreme ultraviolet synchrotron radiation, and the ultra-high-energy cosmic rays that bombard Earth.

Dark matter appears to be a very active and dynamic medium comprising relativistic protons and helium nuclei in the well-known ratio of about 12: 1. Dark matter is widely believed to represent 80% to 90% of the mass of the universe, and believed to be created by the Big Bang. These dark matter characteristics provide the evidence required and used in the next section to reach the conclusion that the Big Bang was relativistic, had a low entropy, and probably satisfied the Second Law of Thermodynamics.

A Relativistic-Proton Dark Matter Would Be Evidence that the Big Bang Had Low Entropy and Probably Satisfied The Second Law of Thermodynamics

In a surprising manner, the Big Bang may have satisfied the Second Law of Thermodynamics. An understanding of this phenomenon is helped by an excerpt from Stephen Hawking's earlier tutorial[10] on the subjects of disorder, entropy, the Second Law of Thermodynamics, and the arrow of time: "It is a matter of common experience, that things get more disordered and chaotic with time. This observation can be elevated to the status of a law, the so-called Second Law of Thermodynamics. This says that the total amount of disorder, or entropy, in the universe, always increases with time."

If the amount of disorder, or entropy, in the universe always increases with time, then at the beginning of time the entropy must have been at its lowest level. The Big Bang also occurred at the beginning of time. Therefore, if we accept the Second Law of Thermodynamics, we must also accept that immediately after the Big Bang the entropy of the universe would be at the lowest level it would reach throughout all time.

However, the Big Bang is normally characterized as a fiery, chaotic, fireball explosion associated with a high level of disorder and entropy. We are thus faced with an enigma as to the level of entropy following the Big Bang, but we are not alone.

On November 18, 2004, the University of Chicago published an article[11] entitled “Astrophysicists attempt to answer the mystery of entropy” that contains the following relevant two-sentence paragraph: “But the mystery remains as to why entropy was low in the universe to begin with. The difficulty of that question has long bothered scientists, who most often simply leave it as a puzzle to answer in the future.”

If the entropy following the Big Bang had been very low, the Second Law of Thermodynamics would have been satisfied, but how could a fiery, chaotic Big Bang explosion have low entropy? This is the enigma that “has long bothered scientists.”

The author sees a possible solution to this enigma that would have the Big Bang firing out, in all directions, high-speed ultra-high-energy (UHE) relativistic protons and helium nuclei near the well-known atomic ratio of 12:1; In other words, a *violent radial dispersion of relativistic baryons.*

A very high percentage of their energies would be available to do work in the universe while their entropy, the measure of the amount of their energy which is unavailable to do work, would be very low. Such a Big Bang, characterized by a *violent radial dispersion* of UHE relativistic nuclei, could create very high usable energy and very low entropy, and could be designated a *Relativistic Big Bang* (RBB).

The temperature of a *Relativistic Big Bang* could be estimated by averaging the kinetic energies of the relativistic protons and helium nuclei. The estimated temperature probably would be of the same order of magnitude as the temperature that scientists estimate for the Big Bang. Nevertheless, the *Relativistic Big Bang* would have the very low entropy that the Second Law of Thermodynamics requires for the *beginning of time*.

Some astronomical evidence for a *Relativistic Big Bang* comes from the ultra-high-energy cosmic ray (UHECR) protons that bombard the Earth’s atmosphere every day. The RBB is the most plausible origin of these UHECRs (See Chapters 29, 31, and Appendix A regarding the GZK effect.)

In the author's Relativistic-Proton Dark Matter theory, these UHECRs are stragglers from the UHE relativistic protons that orbit groups of galaxies within galaxy clusters.

It is widely accepted that the mass of dark matter today totals about 83% of the mass of the universe and that dark matter was created by the Big Bang. Because of this very strong Big Bang-dark matter linkage, strong evidence of the existence of relativistic-proton dark matter would provide strong evidence for the existence of the *Relativistic Big Bang*. The author believes that his 2003[5] and 2006[8] books and his 2005[12] scientific paper provide very strong scientific evidence for the existence of Relativistic-Proton Dark Matter and, therefore, for the existence of the RBB.

Cosmological support for an RBB may come eventually via compatibility with, for example, the Cosmic Microwave Background, or Cosmic Inflation (see Chapters 31 and 34), or the Second Law of Thermodynamics, or the temperatures of the Big Bang, or the mass values for dark matter particles, or the 83% dark matter mass. Note that an RBB would be a very efficient way of creating the universe and conserving its energy because the fewest number of particles and the most useful energy would be created and dispersed, which are characteristics that may be compatible with Cosmic Inflation theory (see Chapters 31 and 34) and its associated Big Bang.

As previously indicated, strong scientific evidence that the dark matter of the universe is comprised of galaxy-orbiting relativistic protons can be found in the 2003 book *How Dark Matter Created Dark Energy and the Sun*[5], the 2005, 19-page scientific paper "Identifying Dark Matter Through the Constraints Imposed by Fourteen Astronomically Based 'Cosmic Constituents'"[12], and the 2006 book, *Comprehending and Decoding the Cosmos: Discovering Solutions to Over a Dozen Cosmic Mysteries by Utilizing Dark Matter Relationism, Cosmology, and Astrophysics* [8].

Confirmation of the identification of dark matter is scientifically supported in the 2006 book through the utilization of the Relativistic-Proton Dark Matter hypothesis, in conjunction with the laws of physics, to derive solutions and plausible explanations for more than 15 previously unsolved cosmic mysteries.

If the existence of the Relativistic-Proton Dark Matter provides strong evidence that the Big Bang satisfied the Second Law of Thermodynamics, then a corollary could follow: Since the Big Bang must have satisfied the Second Law of Thermodynamics, its entropy must have been very low; and since relativistic protons possess the highest possible energy and the lowest possible entropy, they must have represented the principal mass output of the Big Bang.

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CHAPTER 13

COSMIC NEWSWIRE #12

Big Bang Was Not a Chaotic Fireball Explosion, But a Violent Radial Dispersion of Relativistic Baryons That Became Dark Matter, New Scientific Paper Posits

LOS ALTOS HILLS, Calif., Feb. 19, 2007 (AScribe Newswire) -- A new scientific paper published and available on the Internet[13], posits that the Big Bang was not a fiery, chaotic, disordered, fireball explosion but a *violent radial dispersion* of ultra-high velocity dispersion of ultra-high-energy relativistic protons and helium nuclei having a nuclei ratio in the range of about 12:1.

The paper explains that the Big-Bang dispersed relativistic protons and helium nuclei evolved into the mysterious dark matter that now represents about 83 percent of the mass of the universe. In other words, a Big Bang in the form of a *violent radial dispersion of relativistic baryons* created the dark matter of the universe.

The paper, published on the Cornell University Library arXiv.org physics website, is entitled "A Relativistic-

Proton Dark Matter Would Be Evidence The Big Bang Probably Satisfied The Second Law of Thermodynamics". It is dated February 15, 2007 and is available at: http://arxiv.org/abs/physics/0702132.

One of the various types of astronomical evidence supporting such a relativistic Big Bang is the ultra-high-energy cosmic ray (UHECR) protons that bombard Earth's atmosphere every day. In Jerome Drexler's Relativistic-Proton Dark Matter theory, these UHECR's are considered to be stragglers from the UHE relativistic protons that orbit groups of galaxies as dark matter particles in galaxy clusters.

It is widely accepted that dark matter represents 83 percent of the output of the Big Bang. Because of this strong Big Bang-dark matter linkage, the strong evidence of the existence of Relativistic-Proton Dark Matter provided in Drexler's 2003[5] and 2006[8] books also provides strong evidence for the existence of a Relativistic Big Bang.

CHAPTER 14

COSMIC NEWSWIRE #13

Dr. Stephen Petrina's 'Change and Technology in the U.S.' Credits Silicon Valley's Jerome Drexler for Invention of the Laser Optical Storage System

LOS ALTOS HILLS, Calif., March 5, 2007 (AScribe Newswire) -- Earlier in his career, dark matter cosmologist Jerome Drexler pioneered the laser recording of data using his co-invention, in 1979, of Drexon®, a sealed nanotechnology-based laser recording media.

In 1981 Jerome Drexler and Drexler Technology Corporation of Silicon Valley (now called LaserCard Corporation, Nasdaq: LCRD), won the IR 100 Industrial Research Award for the world's first laser read/writable optical memory disc for digital information storage.

Dr. Stephen Petrina, Associate Professor at the University of British Columbia, now gives Jerome Drexler sole credit for the invention and technological development of the Laser Optical Storage System. That designation is on page 89 of Dr.Petrina's recently published history of technology, *Change and Technology in the United States: A Resource Book for Studying the Geography and History of Technology*.

Drexler also invented the LaserCard® optical memory card in 1981. More than 35 million Drexon-based LaserCard optical memory cards have been sold to date. Currently active major optical memory card programs include the US Green Card, the US Laser Visa Mexican-border-crossing card, the US DOD logistics card, the Canadian permanent resident card, the Italian national ID card, the Italian permanent resident card, vehicle registration cards of several states of India, and the Saudi Arabian National ID card.

Jerome Drexler and Eric W. Bouldin, then of Drexler Technology Corp., jointly filed their first Drexon patent application on 7/6/79 that became USP 4,278,756. They then filed patent applications in 1979-1980 that led to US patents 4,269,917; 4,284,716; and 4,298.684. The patent claims are limited to structures formed from silver particles with maximum dimensions of 50 nanometers, to ensure low-laser-power recording.

In 1986 the term *nanotechnology* entered the English language via the first book on that subject. Later, nanotechnology became defined as structures utilizing building block particles “in the length scale of approximately 1 to 100 nanometer range.” Thus, Jerome Drexler and Eric

Bouldin invented a commercially successful nanotechnology product seven years before the first publication of the word *nanotechnology.*

These days, Drexler is deeply involved in astro-cosmology research. In 2002 he discovered and developed the concept of *dark matter cosmology,* based on Albert Einstein's 1905 Special Theory of Relativity. He has authored books published in 2003[5] and 2006[8] and scientific papers in 2005 (astro-ph/0504512)[12] and in 2007 (physics/0702132)[13] on the physics arXiv, to explain and to provide scientific support for his theory of *dark matter cosmology.*

In recent years, Drexler further developed both the concept of *dark matter cosmology* and methods to maximize the amount of knowledge that can be derived from astronomical data. He used a substantial amount of astronomical data, ideas from his 2003 book, and his new analytical methods to derive in his 2006 book plausible explanations for at least 15 and up to as many as 25 mysteries of the cosmos.

The title of Drexler's December 2003 book is *How Dark Matter Created Dark Energy and the Sun: An Astrophysics Detective story*[5].

The title of Drexler's May 2006 book is *Comprehending and Decoding the Cosmos: Discovering Solutions to Over a*

Dozen Cosmic Mysteries by Utilizing Dark Matter Relationism, Cosmology, and Astrophysics[8].

CHAPTER 15

COSMIC NEWSWIRE #14

Big Bang Discovery: Cold Dark Matter May Not Exist, but Einstein-Based Hot Dark Matter Should

LOS ALTOS HILLS, Calif., March 14, 2007 (AScribe Newswire) -- A four-page article in The New York Times Magazine entitled, “Out There”[43], by Richard Panek on Sunday, March 11, focused on the extreme pessimism that prevails today among the many dark matter physicists who have been searching for the mysterious Cold Dark Matter of the universe for as long as 15 years, without success.

The article did not mention Silicon Valley’s inventor/ scientist, Jerome Drexler, who entered the race to identify dark matter in 2002, based upon Albert Einstein’s 1905 Special Theory of Relativity. He has authored books published in 2006[8] and 2003[5] and two scientific papers[12,13] on his Einstein-based *hot* dark matter theory. As described in the 2006 book, his theory appears to explain 15 to 25 previously *unsolved* cosmic-phenomena mysteries.

This May 2006 book is available now at libraries of 22 (now over 40) prominent universities and astronomical institutes including: Harvard, Harvard-Smithsonian, Yale, Stanford, UC Berkeley, Cornell, Vassar, University of Toronto, University of Edinburgh , University of Helsinki, Kyoto University, Universidad de Chile, University of Hamburg, University of Bologna, University of Goettingen, Canterbury University, Max-Planck-Institut for Astrophysik, Pontificia Universidad Catolica de Chile, Astronomical Institute of the Russian Academy of Sciences, University of Groningen, Universidad de Guadalajara, and the Czech Republic's Academy of Sciences.

Drexler's discovery of a strong linkage between the dark matter of the universe and the nature of the Big Bang, indicates that both the Big Bang and the dark matter it created must have satisfied the Second Law of Thermo-dynamics. Cold Dark Matter could not have done so since the Second Law (and probably the First Law) would have been violated in the transformation of the output of an enormous-temperature Big Bang immediately into Cold Dark Matter.

Drexler's recent scientific paper[13], published and available on the Internet, posits that the Big Bang was not a fiery, chaotic, disordered, fireball explosion but an orderly ultra-high velocity dispersion of relativistic protons and helium nuclei in a nuclei ratio in the range of about 12:1.

The paper explains that the Big-Bang dispersed relativistic protons and helium nuclei became the mysterious dark matter that now represents about 83 percent of the mass of the universe. Thus, the dark matter of the universe would also have a very low entropy and would also satisfy the Second Law of Thermodynamics.

The paper also explains that a relativistic-proton Big Bang would be a very efficient way of creating a universe and conserving its energy because the fewest number of particles having the most amount of usable energy would be created and dispersed.

On the other hand, a Big Bang creating Cold Dark Matter WIMPs, representing 83 percent of the mass of the universe, would be producing matter having a low percent of useful energy and high entropy, which would represent a very inefficient Big Bang design concept and a low-energy future for the universe.

The above-mentioned scientific paper, posted on the Cornell University Library arXiv.org physics website, is entitled "A Relativistic-Proton Dark Matter Would Be Evidence the Big Bang Probably Satisfied the Second Law of

Thermodynamics"[13]. It is dated February 15, 2007 and is available at: http://arxiv.org/abs/physics/0702132.

(This scientific paper[13] has played key roles in confirming the existence of both the Relativistic-Proton Dark Matter and the *Relativistic Big Bang*, and in providing an insight into *cosmic inflation*, and in the development of *Postmodern Cosmology*.)

CHAPTER 16

COSMIC NEWSWIRE #15

Dark Matter/Big Bang Mysteries May Have Been Solved Last Week at a London Cosmology Conference

LOS ALTOS HILLS, Calif., April 2, 2007 (AScribe Newswire) -- There are many cosmological mysteries of and questions about the physical universe that are studied by astronomers, astrophysicists, and cosmologists. These scientists have established the so-called “Standard Cosmological Model” that is the most complete description of the physical universe, which they utilize, study, and also question from time to time.

The scientists held a conference ended March 29, 2007 at the Imperial College, London, entitled “Outstanding Questions for the Standard Cosmological Model”, sponsored by the U.S. National Science Foundation and the University of Alabama at Huntsville.

Jerome Drexler submitted a scientific paper to the cosmological conference. The paper appears to provide solutions to two important mysteries, namely, “What is the precise nature of the dark matter of the universe?" and "Did the Big Bang satisfy the Second Law of Thermodynamics?"

Drexler provided solutions to both of these mysteries in his cosmological paper entitled "A Relativistic-Proton Dark Matter Would Be Evidence that the Big Bang Probably Satisfied the Second Law of Thermodynamics"[13]. The paper is presented in Chapter 12.

(This research paper[13] turned out to be very useful in obtaining a physical insight into *cosmic inflation*, which is described as exhibiting a hyper-rapid, extremely short, exponential-growth period of the universe that took place a fraction of a second after the Big Bang. According to scientists, "the detailed particle physics mechanism responsible for cosmic inflation is not known". Drexler may have overcome that psychological barrier by deriving a solution to an important cosmic-inflation enigma, as described in Chapter 31.)