PowerSnakes line of signal cables possess a series of technology advances unlike any cable product in the industry. These advances in science allow all PowerSnakes interconnects and speaker cables to offer state-of-the-art performance at prices that cannot be equaled by any competitor. Instead of pouring money into marketing, packaging, trade-in programs and lopsided dealer discounts, Shunyata has spent the vast majority of its intellectual property on new definable material technology and science innovation. The results of these investments are apparent in the range of PowerSnakes Signal Cable Technologies below, as well as their real-world retail prices and hear-it-to-believe-it performance!

SPDR (SIGNAL PROPAGATION DISTORTION REDUCTION) TECHNOLOGY
This is the point where Shunyata Research scientist Caelin Gabriel's study, development and knowledge deliver a truly ground-breaking technology in terms of its unmistakable, dramatic impact on performance. The SPDR technology is applied in both the Python and Anaconda PowerSnakes signal cables. The SPDR technology is the main component in allowing the Python and Anaconda model cables to out-perform cables costing twenty-times their price. The engineering and detailed process involved in developing this new patent-pending, protected technology is described in detail below. No cable manufacturer has any product, at any price, that will compete with an SPDR treated Shunyata PowerSnake model cable.

Some Background
An electrical conductor that has an alternating signal that propagates across its length will generate an electromagnetic field that surrounds and interpenetrates the conductor. A dielectric is a material that is not electrically conductive and is used to insulate conductive surfaces and wires. Dielectric materials are sensitive to electric fields and demonstrate an effect called dielectric polarization and dielectric relaxation. In essence, a dielectric may store and release electric field energy when exposed to an alternating electric field. Dielectric materials are used to insulate conductors (wires) and are also used in the construction of capacitors.

Fig. 3 is a cross-sectional view of a simple, single wire. 301 is the signal conductor. 302 is the insulating dielectric material. 303 is a conductive shield. When a signal is transmitted through the wire, it generates an electric field around the conductor as represented by the arrows. The electric field from the conductor causes a polar movement of the molecules within the dielectric as represented by the positive and negative symbols. The dielectric stores an electric charge by way of this molecular polarization. When the signal is removed or changes

direction, the electric charge reverses and the stored charge within the dielectric will be released. The electric field generated by the dielectric induces a current within the conductor, which distorts the original intended signal.

A Summary

The SPDR technology reduces dielectric distortion within a signal wire by neutralizing the electric charge differential between the signal conductor and the insulating dielectric material. This is accomplished with the use of a conductive shield that surrounds the signal wire's dielectric material. The electric signal carried by the conductor is also imposed upon the shield through an electric field compensation circuit. The electric field of the conductor and the electric field of the shield oppose one another and create a near zero equivalent electric force within the dielectric material. This effectively neutralizes the charge/discharge distortions created by the dielectric material in the presence of an alternating signal. Since the conductor and shield both carry the signal electric field, they dynamically track the varying alternating signal to create a continuous net zero charge differential within the insulating dielectric.

The SPDR electric field compensation circuit allows the signal's electric field to be imposed upon the shield, while at the same time limiting current flow and eddy currents within the shield.

While the invention uses a conductive shield around the signal conductor, it is not used in a conventional manner. A cable shield is conventionally used to shield RFI/EMI by connecting the shield to a ground pin, ground wire or grounding surface. The shield as used in the SPDR technology cable is not connected to any other wire, grounding wire, or grounding surface or any other conductive surface. The shield is used exclusively to create an opposing electric field within the wire's insulating dielectric material.

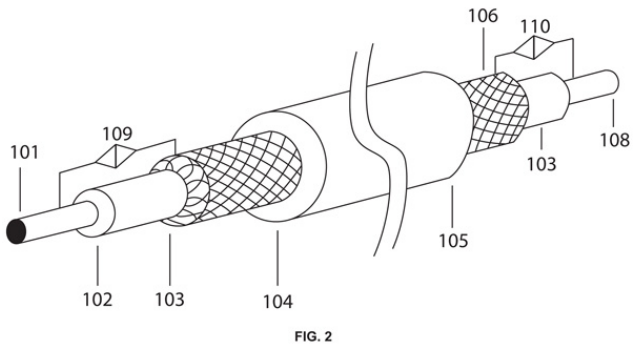

FIG. 2

Fig. 2

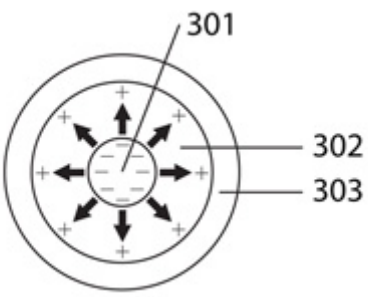

Fig. 3

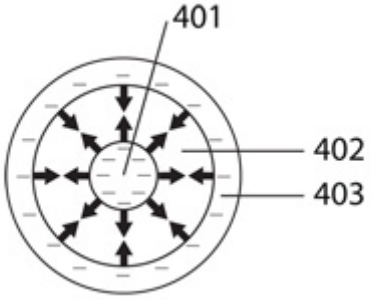

fig. 4

Description of the Drawings
In Fig. 3 only the signal conductor carries the transmitted signal. This creates a dielectric polarization of the insulating materials that surrounds the conductor. In **Fig. 4** the signal is carried by both the signal conductor and by the conductive shield. The signal on the shield creates an electric field that opposes the field generated by the center conductor. These two electric forces oppose on another and prevent a net polarization of the dielectric material.

Fig. 2 illustrates a simple shielded wire that demonstrates an implementation of the invention. The electric field compensation circuit (EFCC) is connected to the signal conductor 101 with other end of the EFCC connected to the conductive shield 103. At the other end of the wire, the signal wire 108 is connected to the EFCC 110 with the other end of the EFCC connected to the shield 106.

VTX WIRE: Virtual Tube Wire Geometry
Shunyata Research is well known for its use of ultra-complex wire geometries that have evolved from the early Matrix Geometry to the patented Helix Geometry and most recently the CX geometry used in Shunyata's award-winning power-cord line. These geometries ability to measurably reduce signal resistance, self-induced reactance and electro-magnetic interference is well documented and remains a core element of all Shunyata designed wire products.

With the aid of DTCD (Dynamic Transient Current Delivery) analysis, Shunyata created a wire geometry that would in essence function as a virtual-tube, vastly reducing the internal skin-effect distortions common among traditional solid-core or stranded wire types. Hollow, or tube-like wire is by nature extremely difficult to use because of its stiffness, but is an ideal signal and power conductor. By creating the VTX wire geometry, Caelin Gabriel has formulated a way to achieve the benefits of using a hollow tube without the impractical drawbacks. Similar to his other research and science based innovations, this technology contributes significantly to the performance of the PowerSnakes Black Mamba speaker cable, Python and Anaconda Signal cable system designs.

COHERGENIC CONDUCTORS
Shunyata Research is dedicated to the pursuit of perfection in the realm of audio signal and power transmission. We are constantly seeking to improve the single fundamental electronic component: WIRE. We have pioneered the use of cryogenics on signal wire and connectors. Shunyata has since advanced cryogenics effectiveness with the advent of our exclusive Alpha-Cryogenic process.

Shunyata Research's Cohergenic Conductors are the result of a process that establishes a permanent inter-molecular alignment of the copper molecules within a conductor. During the extrusion process or the casting process of copper wire, the wire is in a molten to semi-molten state. In this state, the molecules are free to move in relation to one another. As the copper cools and hardens (which occurs very rapidly) the molecules are locked into place in a relatively random orientation.

The Cohergenic Process creates an electrical alignment of the molecules through the use of a Shunyata Research designed electromagnet. The electromagnet's powerful electromagnetic field induces an electrical current within the conductor while the conductor is being processed. As the conductor cools, the molecules are locked into electrical alignment -- PERMANENTLY.

While the exact nature and processes related to Cohergenic Conductors is proprietary to Shunyata Research, there is no denying its profound effects on signal transmission. All Shunyata Research PowerSnakes Signal Cables benefit from Cohergenic Conductors.

ALPHA CRYOGENIC PROCESS

A normal cryogenic process consists of the treated materials being lowered to an extremely low temperature through the use of liquid nitrogen. Ideally this process is controlled by a computer that regulates the temperature descent and ascent in slow and controlled increments to avoid cryogenic shock to the material. Cryogenic shock can cause the material being treated to crack, shatter or incur severe internal molecular damage. Shunyata Research uses the finest computer-controlled laboratory grade equipment available. This device lowers the temperature in single degree increments. Then, there is a stabilization period before the temperature is again lowered. This continues until the temperature has reached a frosty -320 Fahrenheit. The normal cycle for a treatment is 72 hours.

During the past 7 years, Caelin Gabriel has been researching methods to enhance the cryogenic process specifically as it relates to electrical conductors. Many of these experiments involved modified atmospheric conditions involving the use of various inert gases and combinations of gases in an attempt to improve upon the effects of conventional nitrogen based cryogenic treatments.

The result is a proprietary process that creates an ideal atmospheric environment for the cryogenic process to occur. This enhanced treatment is called the Alpha Cryogenic Process. This process is applied to all Shunyata Research conductors, connectors and current carrying metals.

REFERENCES

Cryogenic Society of America, Inc.
http://www.cryogenictreatmentdatabase.org/

MATERIAL: CDA 101-COPPER

In the game of cable marketing, everything can become exaggerated. For example, for years some cable companies played the 9's game, referring to their copper with a series of 9's to represent elevated purity. It started out as a legitimate idea, but within a year this had escalated to claims of nine-nines (99.9999999) pure and greater! How is this possible? To put it simply, it's not. The purity of copper can be measured, but the limit of the purity tests is 99.99 (four nines) pure. Copper quality is never referred to with a series of 9's in the metals industry, it is referred to with CDA numbers. The CDA number verifies that the copper is measured and certified to a specific purity standard. There are many grades: CDA 104, CDA 103, 102 and 101. CDA 101 copper is the highest purity copper on the metals market. It comes with papers that prove its authenticity. This is the copper that Shunyata Research purchases and uses in every product from signal cables to power cords and conditioners.

The majority of cable manufacturers buy their wire pre-made from major US or overseas suppliers. In many cases, it will be the least expensive wire available given that it is hidden from view. There are a few exceptions such as Siltech and Cardas, among others. Shunyata Research is one of the few companies that purchases its own CDA 101 copper in raw ingot form. The copper is then drawn into all the wire forms that are used throughout the Shunyata line. The power cords, power distributors and signal cables all benefit from this top quality material. More than that, using completely matched metallurgy lends a symmetry and coherence to the performance of any system. Given the sheer volume of wire that connects and powers all the components, a power and signal wiring system is an integral component unto itself. Purchasing CDA 101 copper and having it made from scratch into the many wire compliments is an expensive process but is a critical component of Shunyata's success -- attention to_every_detail.