

Could Ghost Particles Become a New Energy Source?

12-Layer Nanofilms Convert Cosmic Energy Penetrating Human Bodies into Everlasting Direct Current



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A Cosmic Energy Downpour That Shrouds Every Human Being, Yet Goes Unnoticed

You can hardly imagine that you are currently wrapped in an eternal cosmic rainstorm.

Every single second, trillions upon trillions of neutrinos pass through your body, your house, the earth's crust, and even rock formations thousands of meters deep. Born from the core of the Sun, supernova explosions and the Big Bang, they are dubbed "ghost particles" — extremely low in mass, barely interacting with any form of matter, not even a light-year-thick lead shield can block their trajectory.

Under traditional physical frameworks, these particles were deemed entirely useless: impossible to capture, difficult to observe, let alone harnessed as an energy source. But what if I told you that humanity has now found a way to trap these ghost particles that pass straight through all matter, converting invisible cosmic background energy into stable, usable direct current?

No sunlight, wind, fossil fuels or charging required; it operates independent of day and night, weather conditions or geographical locations. This is no science-fiction fantasy — it is Neutrinovoltaic technology, a laboratory-verified breakthrough emerging from the cross-disciplinary advances in particle physics and materials science as of 2026.

For half a century, scientists have strived to solve one ultimate puzzle: how to transform cosmic ghost particles that barely interact with matter into controllable perpetual energy for humanity.

I. The Dead-End Dilemma: Neutrino Detection Requires Kiloton-Scale Equipment — How Can We Fabricate Portable Power-Generating Thin Films?

Before diving into power generation, we first need to understand the inherent elusiveness of neutrinos.

Neutrinos earn their moniker of ghost particles chiefly due to their extremely low probability of interacting with matter. To trace their faint signals, humans have constructed colossal detection facilities: Japan's Super-Kamiokande detector, buried one kilometer underground, holds 50,000 tons of ultra-pure water paired with tens of thousands of photoelectric sensors. It takes months to barely capture a handful of neutrino collision signals.

This creates an unsolvable physical deadlock: detecting neutrinos demands kiloton-scale apparatus, making neutrino power generation entirely unfeasible from an engineering perspective.

For decades, the scientific community reached a consensus: neutrinos could only be applied to astronomical and particle physics research, never to civilian or industrial energy

scenarios. Conventional energy sources rely on macroscopic energy carriers — sunlight, wind, fossil fuels — while neutrinos represent a revolutionary new energy dimension humanity has never tapped into.

Just as all researchers reached an impasse, a disruptive discovery in materials science broke the deadlock: graphene.

II. The Pivotal Turning Point: An Atomic-Scale "Drumhead" Catches the Faintest Cosmic Impulses

Conventional materials can be compared to thick steel plates, remaining completely unperturbed as neutrinos pass through. Graphene, by contrast, is an ultra-thin drumhead merely one single atomic layer thick.

Composed solely of a single sheet of carbon atoms, it features an ultra-thin structure and ultra-high electron mobility, with extreme sensitivity to microscopic disturbances reaching the limits of physical detection. Even the faint force of a speck of dust landing can generate a measurable vibration amplitude across the entire thin film.

This marks the core breakthrough for harnessing neutrino energy: we do not need to forcibly "catch" neutrinos; we only need to capture the infinitesimal momentum perturbations left behind as they traverse matter.

Here we introduce the scientifically verified core mechanism: Coherent Elastic Neutrino-Nucleus Scattering (CEvNS). In 2017, the COHERENT Collaboration at Oak Ridge National Laboratory in the United States confirmed this effect with a statistical significance of 6.7σ , publishing their findings in Science.

We use an accurate, accessible analogy to explain this process: collisions of ordinary particles resemble bullets striking bricks, interacting only at isolated points. Neutrino coherent scattering, however, is akin to a finger tapping an intact bronze gong — rather than striking individual atoms separately, neutrinos transmit uniform thrust to the entire atomic nucleus lattice, triggering collective vibrations across the whole structure.

From a physical definition: when the de Broglie wavelength of a neutrino far exceeds the size of an atomic nucleus, coherent interaction occurs between the neutrino and the entire nucleus. The scattering efficiency scales with the square of the number of nucleons, converting the minuscule particle momentum into usable lattice phonon vibrational energy. With this, the first major challenge is fully resolved: the invisible energy carried by neutrinos is successfully converted into tangible mechanical vibrations within materials. Yet new hurdles immediately emerge.

III. First Critical Barrier: Transforming Chaotic Vibrations into Usable Electrical Signals

Lattice vibrations are inherently mechanical energy and cannot power devices directly. Much like wind rustling tree leaves — energy exists yet cannot charge electronics — we require a "translation system" to convert mechanical energy into electrical energy.

To this end, a piezoelectric interface functional layer is integrated into the technical architecture, functioning as a miniature fully automatic generator.

Precise analogy: whenever graphene lattice generates faint deformation and vibration, the piezoelectric layer synchronously senses mechanical changes and automatically extrudes electric charges, translating the disordered "language of lattice vibrations" into orderly electronic electrical signals in real time.

From an engineering perspective, this layer maximizes power generation efficiency under faint deformation via precise material doping and interfacial stress regulation. It receives phonon energy transmitted from graphene and completes the initial full-chain conversion of mechanical energy to electrical energy.

However, the electric current generated at this stage remains high-frequency, disordered, alternating positive and negative chaotic alternating current, analogous to turbulent water flow and entirely unfit for direct application. Secondary modification is required for real-world deployment.

IV. Second Critical Barrier: Install a One-Way Valve to Convert Turbulent Current into Stable Direct Current

All consumer electronics, electronic devices and energy storage systems operate on stable direct current; disordered alternating current holds no practical value. How can we fully regulate the direction of electric current? The research team devised an elegant solution: an MIS junction semiconductor rectification structure.

Plain-language explanation: this structure acts as a one-way water stop valve for electrical circuits, strictly governing the flow direction of electric charges. Forward charges pass through unimpeded, while reverse electric current is fully blocked by the potential barrier, filtering out all chaotic fluctuations.

Distinct from traditional P-N junction rectification technology, the MIS junction constructed from doped silicon layers features ultra-low threshold response. It can accurately identify and efficiently rectify ultra-faint charge signals excited by neutrinos, perfectly suiting the conversion of faint environmental energy.

Following this layer of transformation, disordered fluctuating electric current is converted into unidirectional, continuously stable direct current. Yet one final fatal shortcoming persists: a single structural unit generates extremely weak voltage, only at the microvolt or millivolt scale, insufficient to power any equipment.

To achieve practical power supply, a final energy amplification step is mandatory.

V. Technical Climax: 12-Layer Nanoscale Stacking to Cumulatively Amplify Faint Energy

The core solution to ultra-low voltage relies on a simple yet highly engineered approach: multilayer series stacking technology.

We can illustrate this with a straightforward analogy: connecting 12 miniature power-generating cells end-to-end in precise series, where the faint voltage of each individual cell accumulates sequentially to converge into a total voltage with practical utility.

The core device of Neutrinovoltaic technology adopts an alternating 12-layer nanoheterostructure of graphene and doped silicon — this optimal configuration has been validated via simulations using the Schubart Master Equation and extensive experimental testing. Too few layers result in insufficient voltage and low energy efficiency; excessive layers trigger vibration attenuation, a sharp surge in interfacial defects and drastically elevated manufacturing difficulty. Twelve layers strike the optimal balance across energy efficiency, structural stability and process complexity.

From a physical mechanism standpoint, multilayer heterostructures create a unique volumetric power generation effect. Conventional photovoltaic and thermoelectric power generation only operate via the material surface, whereas this nano-stacked structure turns every single layer interface into an independent power-generating unit, delivering tens of thousands of times the effective working area per unit volume compared with traditional materials.

Each layer independently completes the full energy conversion chain: particle perturbation → lattice vibration → piezoelectric charge generation → rectification and voltage stabilization. Power is then superimposed via series connection, ultimately outputting continuous, stable direct current ready for immediate application.

At this point, the full technical journey of overcoming successive obstacles reaches its conclusion: invisible cosmic particles → mechanical lattice vibration → piezoelectric charge generation → unidirectional rectification and voltage stabilization → cumulative power amplification via multilayer stacking → stable direct current output.

VI. Core Theoretical Backbone: The Schubart Master Equation Unifies All Environmental Energy Sources

A widespread misconception holds that Neutrinovoltaic technology solely relies on neutrinos for energy supply — this is a fundamental misunderstanding.

The essence of this technology lies in capturing the omnipresent cosmic background energy sea, with neutrinos serving only as its most stable and core energy carrier. Developed over two decades by German mathematician Holger Thorsten Schubart, the Schubart Master

Equation provides the sole unified mathematical framework for this cross-dimensional technology.

$$P(t) = \eta \cdot \int_V \Phi_{\text{eff}}(r, t) \cdot \sigma_{\text{eff}}(E) dV$$

Precise definition of each parameter in the formula:

- $P(t)$: Instantaneous output electric power of the system
- η : Total energy conversion efficiency, encompassing mechanical-electrical conversion, rectification, impedance matching and all loss mechanisms
- $\Phi_{\text{eff}}(r, t)$: Effective environmental excitation flux, the sum of contributions from multiple energy channels
- $\sigma_{\text{eff}}(E)$: Effective material coupling coefficient, describing the interaction strength between materials and various environmental energy excitations
- V : Active conversion volume, the total volume of materials participating in energy conversion

This formula does not challenge established physical laws; it functions as an integrated phenomenological framework with rigorous boundary conditions.

Differential form (single-particle perspective): when analyzing from the viewpoint of single-particle energy integration, the equation can be rewritten as:

$$P(t) = \eta \int_{E_{\text{min}}}^{\infty} \Phi_{\text{eff}}(E, t) \sigma_{\text{eff}}(E) dE$$

The two expressions are physically equivalent, respectively suited for macroscopic engineering simulation and microscopic particle analysis scenarios.

A fundamental inequality underpins the entire system:

$$P_{\text{out}} \leq \Sigma P_{\text{in}}$$

In other words, output electric power cannot exceed the product of all externally coupled environmental input power and the device's total conversion efficiency. This inequality forms the foundational principle of the entire system: no energy creation occurs, and no thermodynamic laws are violated. The system is modeled as an open non-equilibrium state, continuously interacting with its surrounding environment.

A natural question follows: why would an open, non-equilibrium system respond at all to such extremely weak energy flows?

This is precisely the question addressed by Schubart's core thesis, *The Years Without the Right Words*. Until quite recently, humanity lacked a precise, self-consistent theoretical description of this microscopic energy coupling mechanism. Today, we have a mature set of concepts and theoretical tools, including open systems, non-equilibrium thermodynamics, coherent material effects, and Dirac electrons, terms that either did not exist decades ago or had not yet taken the form of a complete theoretical framework.

This piece of scientific history resolves the disputes of earlier decades: much of the academic skepticism once directed at neutrino energy utilization rested on a fundamentally different scientific vocabulary. Mainstream thermodynamic thinking at the time centered on closed systems and equilibrium models, lacking a systematic framework for the quantum transport properties of low-dimensional nanomaterials or for coherent energy amplification under non-equilibrium conditions. Only once materials science, quantum physics and non-equilibrium thermodynamics converged over the past decade did humanity finally gain the theoretical language and engineering means to shift ambient cosmic background energy from "unusable" physical common knowledge into a real, capturable, convertible energy source.

This is also the deeper reason this technology is achieving breakthroughs now: the laws of physics have not changed. What has changed is the reach of human understanding and engineering capability, which has finally arrived at this energy space once obscured by an outdated vocabulary.

The formula precisely integrates four energy channels to realize synergistic collection of multi-source energy:

1. **Neutrino Flux:** Solar, atmospheric and geogenic neutrinos permeate continuously, providing a foundational stable energy source
2. **Cosmic Muon Flux:** High-energy secondary cosmic particles, each carrying far greater energy than neutrinos, supplement high-frequency energy input
3. **Ambient Electromagnetic Radiation:** Ubiquitous thermal radiation, electromagnetic noise and terahertz background radiation

4. **Thermal Fluctuation Phonon Energy:** Lattice Brownian motion induced by ambient temperature, generating continuous faint energy

The energy density of any single channel is extremely low and functionally useless on its own. However, the superposition of all four sources, amplified via coherent resonance within nanomaterials, yields stable, utilizable power output. In 2026, an authoritative position paper published in Geneva verified this model via Monte Carlo simulations, achieving a statistical significance of $5.9\sigma \sim 6.0\sigma$ — far exceeding the 5σ threshold required for certifying new discoveries in particle physics, confirming the mathematical self-consistency and stability of the model.

Rigorous Boundary Disclaimer

The above data only verifies that the theoretical model contains no physical contradictions and is mathematically self-consistent. Effects including sub-eV excitation of graphene and high-power output from the 12-layer stacked structure remain model predictions and theoretical deductions, with full public commercial experimental data yet to be released. This technology contains no pseudoscientific attributes such as perpetual motion or free energy; its core function is high-efficiency harvesting of faint ambient environmental energy. The physics allows the described mechanisms; measurement decides.

VII. Core Technical Advantages: A Paradigm Shift Upending Conventional Energy Logic

Compared with traditional renewable energy sources such as photovoltaics and wind power, Neutrinovoltaic technology delivers decisive core advantages that break the scenario limitations of conventional energy:

1. **24/7 All-Environment Power Generation:** No sunlight, wind or temperature difference required; operates independent of day and night, rain or snow, underground, underwater or deep-space extreme environments, generating power nonstop around the clock

2. **Zero-Carbon, Zero-Consumption Perpetual Operation:** No fuel consumption, no chemical reactions, zero greenhouse gas emissions; no consumable replacement required post-installation, delivering lifetime maintenance-free operation
3. **Miniaturization & High Integration:** Nanoscale thin-film architecture is ultra-light and compact, enabling flexible embedding within all types of miniature devices to support multi-scenario integration
4. **No Energy Storage Dependence:** No external batteries or energy storage equipment required; power is generated and consumed in real time, eliminating energy storage losses and safety hazards

VIII. Application Scenarios: From Micro-Sensing Devices to a Future Global Energy Revolution

This technology is not a far-off laboratory concept; it has entered a phased industrialization rollout, with a Sino-German joint R&D center established in Shenzhen and a clearly defined iterative roadmap:

Short-Term Deployment (2026–2027)

Focus on low-power consumption scenarios, delivering autonomous power supply for IoT sensors, implantable medical devices, deep-space exploration instruments and emergency positioning beacons, completely resolving the pain point of frequent battery replacement and charging for miniature devices.

Medium-Term Iteration (2028–2030)

Optimize 3D porous graphene architecture to boost power density; deploy modular household power supply units, outdoor distributed energy systems and long-endurance drones.

Long-Term Outlook

Deploy large-scale stacked arrays to achieve megawatt to gigawatt power output, with potential applications in residential power supply, continuous on-board vehicle energy and industrial zero-carbon power generation, reshaping the global energy landscape.

IX. Dialectical Reflection: Will This Become Humanity's Ultimate Energy Source?

As a highly controversial frontier technology, we must objectively distinguish between experimentally confirmed facts and areas still under exploratory development:

✅ Scientifically Verified Findings: Non-zero neutrino mass, the CEvNS coherent scattering effect, quantum transport properties of graphene, core piezoelectric rectification mechanisms, mathematical self-consistency of the theoretical model.

🔍 Ongoing Iterative Research: Mass production processes for 3D architectures, improvement of volumetric power density, optimization of large-scale manufacturing costs, precise quantification of the contribution rate of each multi-energy channel.

This technology is not the sensationalized "free energy" touted in pseudoscience narratives. Instead, it represents humanity's first systematic capture and utilization of faint cosmic background energy, strictly adhering to all established physical laws and embodying the perfect integration of fundamental science and engineering technology.

A New Inflection Point in Humanity's Energy History

From fire ignition to fossil fuels, from photovoltaics and wind power to nuclear energy, the evolutionary history of human civilization is essentially a chronicle of continuously tapping new forms of natural energy.

In the past, when gazing up at the cosmos, humanity only saw stars and nebulae. Today, using nanomaterials and advanced physics, we catch the endless downpour of cosmic energy permeating the entire universe.

The advent of Neutrinovoltaic technology marks the first time humanity breaks free from the shackles of terrestrial energy sources, unlocking an entirely new energy paradigm that operates universally, around the clock and with zero carbon emissions.

Finally, we pose a question to all readers: Do you believe in the future of this technology? Do you expect it to eventually power smartphones and automobiles and evolve into a mass-market renewable energy source, or will its applications remain limited to micro-sensing devices permanently?



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References

- COHERENT Collaboration. Observation of Coherent Elastic Neutrino-Nucleus Scattering. Science, 2017.
- Nature Physics. Nearly perfect fluidity of Dirac electrons in ultra-high purity graphene. 2026.
- Neutrino Energy Group. The Formula of Invisible Energy (Official Position Paper). 2026.
- Jiangmen Underground Neutrino Observatory (JUNO) official flux calibration data. 2025.
- 2015 Nobel Prize in Physics: Confirmation of neutrino oscillation and non-zero neutrino mass.