

## Neutrinovoltaic Terminology Framework v1.0



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**This terminology framework establishes a structured, scientifically aligned vocabulary for describing neutrinovoltaic and related non-equilibrium solid-state energy conversion systems. Its purpose is to ensure clarity, prevent misinterpretation, and create consistent language across scientific, technical, and communication contexts.**

## 1) Popular Expression of the Core Equation A. Critical Terms Requiring Clarification

**Amplification:** Should be defined as structure-induced power density aggregation, not energy creation.

**Energy Harvesting:** Use as utilization of persistent non-thermal momentum fluxes rather than classical RF harvesting.

**Effective Cross Section:** Define as device-dependent coupling coefficient ( $k_{\text{eff}}$ ), not a fundamental particle physics cross section.

**Resonance Amplification:** Better described as frequency-selective coupling enhancement.

**Nanostructure Amplification:** Parallel coupling of many sub-threshold excitations.

**Ambient Energy:** Refer to background momentum flux from particles and fields.

**Radiation Energy from Nothing:** Avoid; use utilization of existing weak particle and field fluxes.

## 2) Core Physical Model Terms

**Non-Equilibrium Drive:** Persistent external momentum flux outside thermal equilibrium.

**Asymmetric Potential:** Directional solid-state structure enabling ratchet behavior.

**Ratchet Effect:** Rectification of stochastic or weak external excitations.

**Multi-Channel Drive:** Superposition of multiple weak external fluxes.

**Resonance Selection:** Q-factor dependent spectral coupling preference.

**Phonon–Electron Coupling:** Momentum transfer from lattice vibrations to charge carriers.

**Plasmonic Coupling:** Field-induced collective electron oscillations.

**Non-Thermal Drive:** Excitation not solely temperature driven.

**Open System:** Energy exchange with environment; not an isolated equilibrium system.

### 3) Performance & System Terms

**Power Density:** Measured net DC output per active area ( $\text{W}/\text{m}^2$ ).

**Coupled Input Power ( $\Sigma P_{\text{in}}$ ):** Sum of external momentum fluxes before conversion.

**Conversion Chain:** Momentum flux  $\rightarrow$  micro-vibration  $\rightarrow$  electron flow.

**Device Efficiency:** Output relative to coupled input, not solar irradiance or fuel input.

**Scalability:** Parallel area scaling at constant power density.

**Baseload Capability:** Independent of day/night or weather, but not dispatch-controlled.

**Continuous Energy Source:** Time-stable background drive.

### 4) Material & Structural Terms

**Nanostructure Stack:** Multi-layer graphene–silicon architecture.

**Active Area:** Effective coupling layer surface area.

**Coupling Architecture:** Geometry enabling momentum transfer.

**Resonance Window:** Frequency range of maximal coupling.

**Structure-Induced Aggregation:** Parallel nanoscale energy pathways.

**Layer Resonance:** Eigenmodes of multilayer structure.

### 5) Communication Terms with Scientific Reference

**Energy from Neutrinos:** Use as shorthand for utilization of cosmic background momentum fluxes.

**Invisible Energy:** Non-visible particle and field excitations.

**Energy from Ambient Radiation:** Multi-channel non-thermal background drive.

**Baseload without Fuel:** Persistent external momentum drive.

**New Energy Class:** Non-equilibrium solid-state energy conversion.

## 6) Terms to Avoid or Replace

**Energy Amplification:** Replace with power density aggregation.

**Free Energy:** Replace with background momentum flux.

**Energy from Nothing:** Replace with utilization of ubiquitous particle and field fluxes.

**Over-Unity:** Replace with open non-equilibrium system.

**Energy Generation without Input:** Replace with conversion of persistent external drives.