

Loop Ontology of Energy | LOEn

Introduction

Energy has always resisted definition. Physics tracks it, measures it, and conserves it, but no one can say what it is. In textbooks, it becomes a list: kinetic, potential, thermal, electromagnetic. In equations, it is a symbol, conserved but unexplained. Yet we know that without energy, there is nothing to move, to change, to persist. Energy seems to be at the heart of existence itself. Loop Ontology begins with the axiom: Something Is, Nothing Isn't. From this axiom, closure becomes necessary. A thing that persists must close back into itself; otherwise it would dissolve into nothing, which is impossible. The simplest closure is the loop. A loop, once closed, persists. This persistence — this unavoidable self-return — is what we recognize as energy.

Energy as Closure

Energy is not a fuel stored inside matter. It is not a fluid that flows between bodies. It is the very quality of closure itself. To be closed is to oscillate, because returning into oneself is a cycle, and a cycle is already motion. This is why stillness is impossible. A perfectly still universe would be no different from nothing, and nothing cannot exist. Thus, energy is not an addition to being; it is identical with being. Every loop, from the smallest Planck closure to the orbit of stars, is energy expressed. What physics measures as kinetic or potential energy are only different faces of the same ontological fact: closure is tension, and tension is energy.

The Planck Boundary and Indivisibility

At the Planck scale, we encounter the lower boundary of being. Below $\sim 10^{-35}$ m, space cannot be divided without invoking nothingness. Physics stumbles here not because of incomplete equations, but because existence itself demands indivisibility. A Planck loop cannot shrink or dissolve; it must close. This explains why energy is never lost. Conservation is not a mysterious law written into equations — it is the logical consequence of closure. A loop cannot open into nothing, so energy cannot vanish. What we call “transfer” or “transformation” is simply one closure relaxing into another.

Forms of Energy as Loop Geometries

Different manifestations of energy arise from the ways loops stabilize and combine. - A photon is an excitation of a field loop, a vibration that propagates closure. - A proton stabilizes energy through the triangular symmetry of three quarks; two would collapse, four would overstrain, but three is the minimal sustainable balance. - Thermal energy is loops vibrating in incoherent superposition, an excess of oscillations. - Gravitational energy is the densification of loops, their saturation creating directionality of flow. All these are not “kinds” of energy but different expressions of the same fact: a loop under closure cannot help but vibrate.

The Universe as a Loop

The Big Bang can now be reframed. It was not a creation from nothing, but a release of tension from a universe once condensed into a single loop. That loop could not dissolve; it could only relax by differentiating into many smaller closures. Even a universe of one loop would still be energy, though unobservable from

within because no perspective could arise. We are fortunate to inhabit a universe where tension expressed itself into multiplicity, allowing observers to exist at all.

Dark Energy Reinterpreted

Expansion of the cosmos is usually attributed to an unknown “dark energy.” In LOEn, it follows naturally. Saturated loops cannot remain static; they relax outward. Because every point is both center and edge of being, expansion appears faster the farther we look. This acceleration is not a new force but the large-scale expression of closure’s relaxation.

Conclusion

Energy is not something that flows inside the universe. It is the universe itself, in its most basic requirement: closure. To exist as a loop is to oscillate, and to oscillate is energy. Conservation is necessity, not law; expansion is relaxation, not mystery. From the Planck boundary to galaxies, all motion and change are nothing more than the unavoidable persistence of closure. The Loop Ontology of Energy (LOEn) therefore provides not a new definition of energy but its first true grounding: energy is being itself, expressed as closure.