## Energy-Density or Force-Unification Eras of the Cosmos

including “wormhole” weak force IVB connections between eras

(John A. Gowan Feb., 2015)

### MULTIVERSE

**Eternal, Conserved, Symmetric**

All possible (conserved) electromagnetic universes — various physical constants

(?) other energy types?

### “BB”

“Big Bang “wormhole”: a single EM universe (of zero net energy and charge) randomly manifests (via quantum fluctuation?)

### LEPTOQUARK ERA

**TOE: Theory of Everything — all forces unified (Higgs 3)**

Symmetric particle-antiparticle pairs — primordial leptoquarks

“Big Bang”: our universe with its unique physical constants

“Y” IVBs (Intermediate Vector Bosons of the weak force) convert electrically charged leptoquarks to electrically neutral leptoquarks (heavy analogs of neutrons)

### “Y”

“Y” IVB “wormhole”: electrically neutral leptoquarks selected by “Y” IVBs

### HYPERON ERA

**GUT: Grand Unified Theory — strong and electroweak forces unified (Higgs 2)**

Heavy baryons — particles containing three quarks — mass carriers

Symmetry-Breaking via the weak force “X” IVBs

Electrically neutral leptoquarks decay asymmetrically via “X” IVB to produce our matter-only universe, including mass-carrying baryons and leptoquark anti-neutrinos

### “X”

“X” IVB “wormhole”: colorless baryons selected by “X” IVB — “proton decay”

### LEPTON ERA

**EW: Electroweak force unification — electric and weak forces unified (Higgs 1)**

Alternative Charge Carriers: (leptons, neutrinos, and mesons)

“W” IVB leptonic particle and quark transformations

### “W”

“W” IVB “wormhole”: alternative charge carriers selected by “W” IVB — leptonic decays and nuclear transformations; (lepton number = zero)

### ATOMIC ERA

**EM: Electromagnetic unification — all forces distinct (photon velocity “c”)**

Periodic Table, chemistry, atoms, molecules, Life,

free photons, spacetime, macro-universe, history, causality

Ground State — stable, cold, asymmetric (no antimatter, no IVBs)

Electron-shell chemistry only — no nuclear reactions

All forces act spontaneously to return asymmetric atomic system to its original light symmetry.