Current Review all Publications around the Multi-fold universe – February 2021

Stephane H. Maes – shmaes.physics@gmail.com

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Abstract:

Tracking all Publications around the Multi-fold universe / Compilation of updates, follow-ups and new works, up to February 15, 2021. More recent updates are available at the citation URL.

The main paper that started it all: [“Quantum Gravity Emergence from Entanglement in a Multi-Fold Universe”](#), available at:

- <https://vixra.org/pdf/2006.0088v1.pdf>
- https://www.academia.edu/43311127/Quantum_Gravity_Emergence_from_Entanglement_in_a_Multi-Fold_Universe
- DOI: [10.13140/RG.2.2.31411.45601/1](https://doi.org/10.13140/RG.2.2.31411.45601/1)
- https://www.researchgate.net/publication/342093099_Quantum_Gravity_Emergence_from_Entanglement_in_a_Multi-Fold_Universe

Cite as: Stephane H. Maes, (2020) “Quantum Gravity Emergence from Entanglement in a Multi-Fold Universe”, [viXra:2006.0088v1](#), (June 9, 2020).

All the pages on one page:

- [Quantum Gravity Asymptotic Safety from 2D Universal Regime and Smooth Transition to Dual Superstrings](#)
- [A Multi-fold Universe Genesis Inspired By Explosive Total Collision: The Source Of The Big Bang?](#)
- [The String Swampland and de Sitter Vacua: A Consistent Perspective for Superstrings and Multi-fold Universes](#)
- [Entangled Neural Networks from Multi-fold Universes to Biology](#)
- [The W-type Multi-Fold Hypothesis and the Quantum Physics Interpretation of Wave Functions and QFT](#)
- [Viable Lattice Spacetime and Absence of Quantum Gravitational Anomalies in a Multi-fold Universe](#)
- [Can Chirality Flips Occur in a Multi-Fold Universe? What About Conservation Laws?](#)
- [Multi-fold Higgs Fields and Bosons](#)

- [Particles of The Standard Model In Multi-Fold Universes](#)
- [Multi-Fold Black Holes: Entropy, Evolution and Quantum Extrema](#)
- [Comments to “Particle Physicists Continue To Make Empty Promises”](#)
- [Multi-Fold Dark Matter Effects and Early Supermassive Black Holes](#)
- [The E/G conjecture: entanglement is gravity and gravity is entanglement](#)
- [Multi-Fold Universe Dark Matter Effects Survive Low-Mass Galaxies with Dark Matter Deficits and Excesses](#)
- [GR / Gravitons obviously in strings/superstrings because their Action Includes / Approximates the Hilbert/Einstein Action \(and more\)](#)
- [Circular Arguments in String and Superstring Theory from a Multi-fold Universe Perspective](#)
- [No Conventional Sterile Neutrinos In a Multi-fold Universe: just SM G business as usual](#)
- [Biggest Outcome of the Multi-fold Universe Proposals](#)
- [Latest Highlights and Results From Multi-Fold Models](#)
- [Renormalization and Asymptotic Safety of Gravity in a Multi-Fold Universe: More Tracking of the Standard Model at the Cost of Supersymmetries, GUTs and Superstrings](#)
- [The Multi-fold Universe – An executive overview as of September 16, 2020](#)
- [Multi-Fold Universe Dark Matter Successful Explanation and the “Too Thin Universe” but “Too Strong Gravity Lensing by Galaxy Clusters”](#)
- [Interpretation of “Neural Network as the World”](#)
- [Implicit Multi-Fold Mechanisms in a Neural Network Model of the Universe](#)
- [No Gravity Superposition Induced Wave Function Collapse in a Multi-fold Universe](#)
- [No Tension in a Multi-fold Universe with respect to “A New Cosmic Tension: The Universe Might Be Too Thin”](#)
- [Call for Collaboration](#)
- [Tracking Down The Standard Model With Gravity In Multi-Fold Universes](#)
- [Area Laws Between Multi-Fold Universes and AdS](#)
- [Multi-fold Gravitons In-N-Out Spacetime](#)
- [Superstrings Encounters of the Second, Third or Fourth Types?](#)
- [Particles, Especially Virtual Particles, in a Multi-fold Universe vs. QFT](#)
- [More Matter Than Antimatter, All Falling Down](#)
- [Massless and Massive Multi-Gravity in a Multi-fold Universe](#)
- [Derivation of the Equivalence Principle in a Multi-fold Universe](#)
- [Entanglement and Random Walks Concretize Time in a Multi-fold Universe](#)
- [No Gravity Shields in Multi-folds Universes](#)
- [All Preprints derived from Gravity Emergence from Entanglement in a Multi-fold Universe](#)
- [Gravity-like Attractions and Fluctuations between Entangled Systems?](#)
- [Gravity Stabilizes Electroweak Vacuum – No Bubble of Nothing to Worry About!](#)
- [Gravity Dictates the Number of Fermion Generations: 3](#)
- [Relevant Publications Tracking](#)
- [Strong CP Violation Tamed in The Presence of Gravity](#)
- [ArXiv HEP-TH Endorsement Request for Preprints Publication on arXiv?](#)
- [Right-handed neutrinos? Mass? Ask Gravity](#)
- [Explaining Dark Matter Without New Physics?](#)

- [Explaining Dark Energy, Small Cosmological Constant and Inflation Without New Physics?](#)
- [Alignments and Gaps Between Multi-fold Universes And Loop Quantum Gravity](#)
- [Ultimate Unification: Gravity-led Democracy vs. Uber-Symmetries](#)
- [Gravity or Magnetic Monopoles? You Cannot Have Both!](#)
- [Dualities or Analogies between Superstrings and Multi-fold Universes](#)
- [Gravity Induced Anomalies Smearing in Standard Model so that Protons May Never Decay, Except in Black Holes](#)
- [Progresses on Proving the Mass Gap for Yang Mills and Gravity \(maybe it's already proven...\)](#)
- [Protons may never decay, except in black holes](#)
- [References I used / of interest](#)
- [Paper "Quantum Gravity Emergence from Entanglement in a Multi-Fold Universe"](#)
- [Revisions of paper: "Quantum Gravity Emergence from Entanglement in a Multi-Fold Universe" – tracking list](#)
- [Stéphane H. Maes, PhD. – Physics Blog](#)
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View of Archives (i.e. organized list of all papers and blogs by dates - Except for pages that require direct URL or search)

- [September 2020](#)
- [August 2020](#)
- [July 2020](#)
- [June 2020](#)

Other pages:

- [Some reflections: a Completed Journey about Strings](#)

Notable comments: (started to be tracked on 10/12/2000 – earlier notable comments may not be tracked):

2/7/21:

- How the entanglement of neighboring concretized spacetime create very small scale attraction that may result into a negative multi-fold dark energy effects at such scales: <https://shmaesphysics.wordpress.com/2021/02/07/quantum-gravity-asymptotic-safety-from-2d-universal-regime-and-smooth-transition-to-dual-superstrings/>
- This paper also includes some rehabilitation of superstrings to characterize the 2D UV fixed point of gravity associated to random walk in a multi-fold universe: <https://shmaesphysics.wordpress.com/2021/02/07/quantum-gravity-asymptotic-safety-from-2d-universal-regime-and-smooth-transition-to-dual-superstrings/>

1/30/21:

- The original proposal that anti particles are particles moving back in time comes from Stueckelberg, not Feynman; a fact rarely known: <https://shmaesphysics.wordpress.com/2020/07/05/more-matter-than-antimatter-all-falling-down/comment-page-1/#comment-1491>.
- NanoGrav results are not necessarily implying cosmic strings which do not necessarily imply validation of strings or new Physics: <https://shmaesphysics.wordpress.com/2020/06/14/dualities-or-analogies-between-superstrings-and-multi-fold-universes/#comment-1486>. That point of view was immediately supported by follow-up papers hinting rather at primordial black holes: <https://shmaesphysics.wordpress.com/2020/06/14/dualities-or-analogies-between-superstrings-and-multi-fold-universes/comment-page-1/#comment-1495>.
- It is worth emphasizing that we have found an explicit proof that superstrings are well behaved and not diverging at high curvatures; something typically only hinted by order expansions: <https://shmaesphysics.wordpress.com/2020/10/11/circular-arguments-in-string-and-superstring-theory-from-a-multi-fold-universe-perspective/> (Section 2).

1/27/21:

- Intracluster lights and Multi-fold dark matter distributions: <https://shmaesphysics.wordpress.com/2020/06/21/explaining-dark-matter-without-new-physics/comment-page-1/#comment-1478>.
- Higgs Boson model of inflation and BEC: <https://shmaesphysics.wordpress.com/2021/01/17/a-multi-fold-universe-genesis-inspired-by-total-explosion-collision-the-source-of-the-big-bang/#comment-1475>

1/21/21:

- Relationship between source of supernovae explosion induced by chaotic neutrinos and our proposal of explosive total collision / N-body as in black holes: <https://shmaesphysics.wordpress.com/2021/01/17/a-multi-fold-universe-genesis-inspired-by-total-explosion-collision-the-source-of-the-big-bang/#comment-1445>.
- P and CP symmetry violation by multi-fold mechanism as source for CMB polarization related to P violation:: <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/#comment-1444>.

- Outrage at apparent subreddit /r/Physics censure when contrary to superstrings:
<https://shmaesphysics.wordpress.com/2020/06/14/dualities-or-analogies-between-superstrings-and-multi-fold-universes/#comment-1451> (and sub comments).

1/18/21:

- Value of copying mind behaviors and architecture to improve AI:
<https://shmaesphysics.wordpress.com/2020/12/31/entangled-neural-networks-from-multi-fold-universes-to-biology/#comment-1440>.

1/17/21:

- Some interesting modeling of the inside of a blackhole with a new and compelling suggestion for the quantum extrema surface that may appear near it center:
<https://shmaesphysics.wordpress.com/2021/01/17/a-multi-fold-universe-genesis-inspired-by-total-explosion-collision-the-source-of-the-big-bang/>.

1/16/21:

- Spacetime is 4D (3D spatial):
<https://shmaesphysics.wordpress.com/2020/09/19/renormalization-and-asymptotic-safety-of-gravity-in-a-multi-fold-universe-more-tracking-of-the-standard-model-at-the-cost-of-supersymmetries-guts-and-superstrings/comment-page-1/#comment-1417>

1/13/21:

- Status of Supersymmetry: <https://shmaesphysics.wordpress.com/2020/10/11/circular-arguments-in-string-and-superstring-theory-from-a-multi-fold-universe-perspective/comment-page-1/#comment-1433> .

1/12/21:

- Proof that de Sitter vacua are in the string swampland:
<https://shmaesphysics.wordpress.com/2021/01/12/the-string-swampland-and-de-sitter-vacua-a-consistent-perspective-for-superstrings-and-multi-fold-universes/> .
- Justification of spacetime expansion as an adiabatic process that respect the first law of thermodynamics; something used repeatedly in our paper and key references:
<https://shmaesphysics.wordpress.com/2020/10/11/circular-arguments-in-string-and-superstring-theory-from-a-multi-fold-universe-perspective/comment-page-1/#comment-1404>.
- Justification of spacetime expansion as an adiabatic process that respect the first law of thermodynamics; something used repeatedly in our paper and key references:
<https://shmaesphysics.wordpress.com/2020/09/12/implicit-multi-fold-mechanisms-in-a-neural-network-model-of-the-universe/comment-page-1/#comment-1403>

1/2/21:

- Multi-fold Higgs inflation (and UU particles) also encompasses BEC (Bose Einstein condensate) inflation and phase transition (Slow roll):

<https://shmaesphysics.wordpress.com/2020/11/10/multi-fold-higgs-fields-and-bosons/#comment-1354>

12/30/20:

- Comments to some blogs and papers touting Strings “miracle” (Reference Frame) or why they work (Witten): <https://shmaesphysics.wordpress.com/2020/10/11/circular-arguments-in-string-and-superstring-theory-from-a-multi-fold-universe-perspective/comment-page-1/#comment-1348>
- Entanglement requires extra /independent layer matching the multi-folds: <https://shmaesphysics.wordpress.com/2020/09/12/implicit-multi-fold-mechanisms-in-a-neural-network-model-of-the-universe/comment-page-1/#comment-1346>

11/6/20:

- Analysis illustrating that superstrings are not the only game in town as well-behaved quantum gravity theory built on QFT. Multi-fold models can be such an approach: <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/comment-page-1/#comment-1168> and sub comment: <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/comment-page-1/#comment-1172>

11/3/20:

- Geometrical objects in 7D unconstrained Kaluza-Klein flat spacetime embedding a multi-fold universe recover most particles of Standard model (masses and charged) as ground state and excitations of these objects or of interactions with them: <https://shmaesphysics.wordpress.com/2020/08/30/tracking-down-the-standard-model-with-gravity-in-multi-fold-universes/comment-page-1/#comment-1146>
- Higgs in 7D unconstrained Kaluza-Klein flat spacetime embedding a multi-fold universe explain spacetime concretization in random walks, the inflation, and the electroweak symmetry breaking. It also motivates the allowance of Higgs in multi-folds despite the tenancy models excluding any other particles, something key to recovering the equivalence principle: <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/comment-page-1/#comment-1149>
- A viable scenario to explain why no interacting right handed neutrinos?: <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/#comment-1154>

10/29/20:

- A multi-fold rewriting of "The Most Famous Paradox in Physics Nears Its End": <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/comment-page-1/#comment-1118>

10/28/20:

- What if CP is violated in the universe? Then we do not need axions and they are not candidates to explain dark matter. Strong CP violation is at least explained in a multi-fold universe: <https://shmaesphysics.wordpress.com/2020/06/23/strong-cp-violation-tamed-in-the-presence-of-gravity/comment-page-1/#comment-1104>
- Weak Equivalence Principle is not violated by gravitational waves, even if yes mass can be determined as a result. Multi-fold match derived between gravitational and inertial match is not questioned either: <https://shmaesphysics.wordpress.com/2020/06/29/derivation-of-the-equivalence-principle-in-a-multi-fold-universe/comment-page-1/#comment-1102>
- A possible link between multi-fold universes and Extended Harmonic Maps?: <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/comment-page-1/#comment-1108>

10/24/20:

- Time dilation at quantum scales derived from conventional framework is an indication that semiclassical models work at classical scale as we predicted: <https://shmaesphysics.wordpress.com/2020/06/28/entanglement-concretizes-time-in-a-multi-fold-universe/comment-page-1/#comment-1092>

10/20/20:

- There are no cases of supraluminosity. Tunneling is no exception. See: <https://shmaesphysics.wordpress.com/2020/06/30/massless-and-massive-multi-gravity-in-a-multi-fold-universe/#comment-1044>
- Conditions for wormholes to fit as multi-folds. See: <https://shmaesphysics.wordpress.com/2020/06/09/paper-published-as-preprint-quantum-gravity-emergence-from-entanglement-in-a-multi-fold-universe/comment-page-1/#comment-1051>

10/13/20:

- Multi-fold tenancy and Higgs bosons. Interaction with Higgs also exist in the multi-folds, a consequence of re-deriving the equivalence principle: <https://shmaesphysics.wordpress.com/2020/06/29/derivation-of-the-equivalence-principle-in-a-multi-fold-universe/comment-page-1/#comment-952>
- Handling (related) diffuse galaxies with excess or deficit of dark matter – Multi-fold universe entanglement effects explains the effects of dark matter as well as dark matter models that assume actual matter: <https://shmaesphysics.wordpress.com/2020/06/21/explaining-dark-matter-without-new-physics/comment-page-1/#comment-950>

10/12/20:

- Possible hints of observation of effects of right-handed neutrinos?: <https://shmaesphysics.wordpress.com/2020/06/21/right-handed-neutrinos-ask-gravity/#comment-932>
- Hilbert Einstein Action in superstring/string action: <https://shmaesphysics.wordpress.com/2020/10/11/circular-arguments-in-string-and-superstring-theory-from-a-multi-fold-universe-perspective/#comment-936>
- Motivation, overview and problems with supersymmetry: <https://shmaesphysics.wordpress.com/2020/10/11/circular-arguments-in-string-and-superstring-theory-from-a-multi-fold-universe-perspective/#comment-934>
- No low energy supersymmetry or Anthropic principle can survive our analyses...: <https://shmaesphysics.wordpress.com/2020/10/11/circular-arguments-in-string-and-superstring-theory-from-a-multi-fold-universe-perspective/#comment-943>

10/1/2020:

- The entanglement model for dark matter in a multi-fold universe works also to explain how early giant black holes could have formed: <https://shmaesphysics.wordpress.com/2020/06/21/explaining-dark-matter-without-new-physics/#comment-782>

Cite as: Stephane Maes, (2021), "Current Review all Publications around the Multi-fold universe – February 2021", <https://osf.io/8b69k>, <https://shmaesphysics.wordpress.com/shmaes-physics-site-navigation/>, February 15, 2021. (More recent updates available at the URL)

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[Updates will be periodically published]