Absolute parallelism, modified gravity, and suppression of gravitational *short* waves

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A unique variant of Absolute Parallelism (nothing, nor D=5, can be changed if to keep the theory safe from singularities of solutions) is considered. It leads to a few phenomenological models including an expanding-shell cosmology (anti-Milne model) and a modified gravity. The last looks (mostly) like $R^{\mu\nu}G_{\mu\nu}$-gravity on a brane of a huge scale, L, along the extra-dimension. The correction to the Newtonian gravity force of a massive body, which depends now on two parameters (bi-Laplace equation) and behaves as $1/r$ on a large scale, $r>L$ ($\sim$ kpc), can start from zero (the Rindler term vanishes), if a constraint is imposed on these parameters. On further consideration, one can conclude that generation of gravitational 'short' waves, $\lambda<L$, is inhibited in this case.

Theoretical physicists form in fact a quite specific subset of experimentalists: they are doing experiments on their own brains. The mainstream theorists participate in highly collective 'experiments'. However, as one could note, string theory, as well as M-theory, still does not deserve the definite article, *the*. The result of my own 'experiment' is a single-field theory, really simple (according to Kolmogorov's theory of algorithm complexity) and beautiful (that is, of very large symmetry) – the unique (no free parameters) $5D$ variant of Absolute Parallelism, which is free from emerging singularities in solutions of general position [1]. (The Little Prince's Principle: true beauty should be single and unique.)

That to give a clear picture of the theory, many items should be sketched: linear instability of the trivial solution and expanding O_4-symmetrical solutions; tensor $T_{\mu\nu}$ (positive energy, but only three polarizations of 15 carry D-momentum and angular momentum; how to quantize ?) and post-Newtonian effects; topological classification of symmetrical $5D$ field configurations and a lagrangian phenomenology of topological quanta (a kind of topological Brownian particles which carry topological charges and/or quasi-charges [1]) on an expanding classical background; a 'phenomenological' $R_{\mu\nu}G^{\mu\nu}$-gravity on a very thick brane and the change in the Newton's Law: $\frac{1}{r^2}$ goes to $\frac{1}{r}$ with distance. (It is different from the MOND paradigm [2]. MOND is odd a bit: given two bodies of different mass, one can choose the distance between them such that the heavier body is in the MONDian regime, while the other in the Newtonian one; so, Newton's 3rd law, if not 2nd [this is testable], is violated).

The theory is able, with a little help of guess-work, to explain the meaning of many features of the Standard Model: the flavors and colours, quark confinement, ubiquity of the least action principle (and the very superposition principle as well). Moreover, this theory gives a number of testable predictions: - spin zero elementary particles do not exist; - neutrinos are true neutral; - there is no room for SUSY and Dark Matter; - additional pseudovector bosons (responsible for dynamical mass generation) should exist; - the gravitational part of the Lagrangian is $R^{\mu\nu}G_{\mu\nu}$, and, due to the huge extra-dimension, it gives switching from the Newton's law, $1/r^2$ (at small scale), to the more slowly decreasing law, $1/r$, at larger distances; - the Hubble plot should be described by the anti-Milne model [in FRW-framework it means $a = a_0(1 + H_0 t), k = +1$], without any fine tuning and free parameters (excepting the Hubble constant, of course).

Frankly, this theory has some more reasons, than any other one, for a belief that it is *on the right track*. Though one more prediction is to be added: generation of gravitational 'short' waves ($\lambda<L$) is suppressed. (The practical ways proposed to detect GW of very low and ultra low frequency bands are pulsar timing arrays and quasar proper motions, see e.g. arXiv:1104.5049).

[1] Zhogin I. L. Old and new research on the Absolute Parallelism theory. Lambert Academic Publishing: 2010, ISBN 978-3-8383-8876-2; arXiv:gr-qc/0412130v2.
[2] Milgrom M. The modified dynamics — a status review. arXiv:astro-ph/9810302.