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THE SUPER G-STRING[1]

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NOT TOO ABSTRACT

We describe a **new** string theory which gives all the phenomenology anybody could or will ever want (and more). It makes use of higher dimensions, higher derivatives, higher spin, higher twist, and hierarchy. It cures the problems of renormalizability of gravity, the cosmological constant, grand unification, supersymmetry breaking, and the common cold.

1. INTRODUCTION*

Actually, this paper doesn't need an introduction, since anyone who's the least bit competent in the topic of the paper he's reading doesn't need to be introduced to it, and otherwise why's he reading it in the first place? Therefore, this section is for the referee.

Various string theories have been proposed to solve the universe (or actually several universes, due to the use of higher dimensions)1). Well, here's another one.

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*Complex conjugate.

Of course, this one's better because it solves problems the old ones didn't (or *really* solves problems the old ones only hand-waved away): (1) Proton decay is slowed by the use of super-preservatives. As a result, the primary cause for its finite lifetime is cancer. (2) The hierarchy scale is found by renormalization group arguments to be of the order of $e^{4\pi D} \approx 10^{55}$, where D is the dimension of spicethyme (10). (3) The grand unification group is found to be $E(8)\otimes E(8)\otimes E(8)\otimes E(8)$, where the first two $E(8)$'s are from lattice compactification, the third $E(8)$ is from three-dimensional maximally extended supergravity, and the last $E(8)$ is for taxes. (4) Any particle we can't find is produced as a Skermion2).

Our string is a supersymmetric version of the G-string3), which is known to have maximal compactification4). This is due to the appearance of generalizations of the Calliope-Yeow! metrics5). Finiteness is proven to all orders. The masses of all hadrons can be predicted exactly. The no-content supergravity models6) can be obtained in the low-physics limit.

A preliminary version of these results was presented in7).

2. NOTATION

Before beginning, we introduce some notation (but not too much, because ambiguities are useful for hiding factors of $\sqrt{2}$ 8) that we haven't checked yet). A $\wedge$ is used to indicate a wedge product of differential forms9) (for example, $dx^\mu \wedge dx^\nu \$_{\mu\nu}$ is a W2-form). Unless explicitly otherwise, we use index-free notation (i.e., we just leave all the indices off our equations). As a result, the Einstein summation convention is unnecessary (especially since nobody knows how to sum Einsteins anyway). Contravariant vectors are then distinguished from sandanistavariant vectors by context. "-1" is used to refer to the operator which produces 180^{O} phase shifts (as in, e.g., the sublimation of ice). Before lattice compactification10), we work in 26 dimensions, with coordinates labeled as

$$a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z.$$

After lattice compactification, we work in 10 dimensions, with coordinates labeled as

$$0, 1, 2, 3, 4, 5, 6, 7, 8, 9.$$

Spinor coordinates are written as either Θ11) or θ12). (Further superspace conventions are contained in13).) Letters indicating symbols that don't represent what you think they do are indicated by a “ $\tilde{}$ ” (as in, e.g., wall-$\tilde{\sigma}$). Greek letters are used to indicate culture, Gothic letters are used because they’re pretty, Hebrew letters are used for religious reasons, and Cyrillic letters are avoided for political reasons.

3. CLASSICAL G-STRING

The action for the classical G-string is

$$\aleph = \frac{1}{\hbar}\oint \wp\Re\Im\top\bot\|\angle\forall\exists\neg\flat\natural\sharp\clubsuit\diamondsuit\heartsuit\spadesuit\coprod\sqcup\odot\uplus\hookleftarrow\rightleftharpoons\nearrow\nexists\smile\frown\bowtie\varpi\succ\models\Updownarrow\rceil\llbracket . \tag{\#}$$

(The inverse of this action has appeared in$^{14)}$.) In component notation this becomes, unfortunately,

$$\begin{aligned}\aleph = \frac{1}{\hbar}\oint(\, & \wp\Re\Im\top\bot\|\angle\forall\exists\neg\flat\natural\sharp\clubsuit\diamondsuit\heartsuit\spadesuit\coprod\sqcup\odot\uplus\hookleftarrow\rightleftharpoons\nearrow\nexists\smile\frown\bowtie\varpi\succ\models\Updownarrow\rceil\llbracket_{1}+\\
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& \wp\Re\Im\top\bot\|\angle\forall\exists\neg\flat\natural\sharp\clubsuit\diamondsuit\heartsuit\spadesuit\coprod\sqcup\odot\uplus\hookleftarrow\rightleftharpoons\nearrow\nexists\smile\frown\bowtie\varpi\succ\models\Updownarrow\rceil\llbracket_{10}+\\
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& \wp\Re\Im\top\bot\|\angle\forall\exists\neg\flat\natural\sharp\clubsuit\diamondsuit\heartsuit\spadesuit\coprod\sqcup\odot\uplus\hookleftarrow\rightleftharpoons\nearrow\nexists\smile\frown\bowtie\varpi\succ\models\Updownarrow\rceil\llbracket_{16}),\end{aligned}$$

$$\textit{where}\quad \theta = \vartheta = \Theta = \textcircled{\tiny H} = \textcircled{\dot{\mathrm{H}}} = \textcircled{\ddot{\smile}} = \overset{\textcircled{\ddot{\smile}}}{\bowtie} \quad \textit{and}\quad \Omega^{-1} = \mho \quad ,$$

and we have used the Newton-Witten equation

$$F = ma \quad .$$

The G-string is unique in that it combines the properties of all known string theories. It has 26-dimensional modes propagating to the left, 10-dimensional modes propagating to the right, and 2-dimensional modes just sitting around wondering what the hell is going on. (These left- and right-footed modes only propagate on the surface of the string, because that's as far as you can get on one foot.) 4 dimensions then follows directly from the simple identity15)

$$4^2 = 26 - 10.$$

In ten-dimensional (x) space the G-string has global supersymmetry, in two-dimensional ($\sigma - \tau$) space it has local supersymmetry, and in four-dimensional (honest-to-God) space it has no supersymmetry. Internal symmetry is introduced by applying Champagne factors: b, c, and d quarks16) on one end of the string, and s, t, and u quarks on the other. Since the latter quarks are also the Mandelstam variables, we can introduce higher-derivative interactions through that end. (The t quark is also the tea quark of the MI tea-bag13), so the latter model will be produced in the Regge limit where s and u go to infinity while fixing some tea. The string is reobtained in the inverse limit $\overset{\check{\infty}}{\frown} \leftarrow \forall\exists\perp$.) The last term in the action is a Wess-Zumino term, which causes the coupling to be quantized (see below).

4. FIRST-QUANTIZED G-STRING

Since the coupling is quantized (see above), the action is finite to all orders. As a result, all higher-order corrections can be neglected, which is good, since nobody wants to calculate them anyway. (Similar remarks apply to anomalies.)

The most important property of the quantum G-string is that it provides more possibilities for compactification. This is accomplished by use of the coordinate

$$x^{\mu(\sigma)},$$

where the vector index is a function of the string coordinates. Effectively, this makes the spacetime dimension a function of σ. We can thus choose $D(\sigma) = 4$ *at the boundary* of the open string. As a result, all massless vector fields (photons, gluons, etc.), which couple only to the end of the string, couple only to four-dimensional spacetime, whereas gravity, which couples to the middle of the string, couples to all dimensions. The extra dimensions therefore act as "dark matter". (More generally, we can choose D to be a nonlinear function of σ, thus naturally introducing nonlinear σ-models.)

The super G-string therefore allows for a much greater choice of effective theories. Thus, it not only produces QED[17)] and QCD[18)], but also QAD (quantum aerodynamics), QHD (quantum hydrodynamics), QUD (quantum uterine device), and QVD (quantum venereal disease).

This action is conformally invariant[19)]. As a result, it describes particles of continuous mass[20)]. Consequently, all masses of the known (and unknown) particles are predicted. However, since there are an infinite number of particles, lack of space prevents us from giving these results here. (Preliminary results appeared in[21)].)

5. SECOND-QUANTIZED G-STRING

Due to the conformal symmetry of the super G-string, the second-quantized G-string is *the same* as the first-quantized one[22)]. The only difference is that more parentheses are needed: e.g., $\Phi[X(\sigma)]$. Path[23)] integrals are performed in terms of the sheets that the strings sweep out in spacetime. In the interacting case the nontrivial topology gives contour sheets, so we simplify the calculation by conformal transformations on the Green functions[24)]. Loop integrals can be expressed in terms of Jacobi Theta functions[25)], but since $\Theta^2 = 0$[26)], these cancel against the Θ's of the anticommuting coordinates, giving another proof of finiteness. In performing explicit calculations, we use the interacting string picture, with all string fields expanded in terms of incoherent states. Amplitudes can then be expressed in terms of the two-dimensional Green function

$$G(\sigma,\tau) = \int d\nu \; I_\nu(\sigma) R(\sigma,\tau;\nu),$$

where $I = \Im J$ is the Imbessel function, R is the retarded potential, and ν is a dummy variable.

Since this formulation corresponds to field theory, it's useful to have the gauge invariance of the string manifest. This is much easier for the super G-string than other supersymmetric strings (Neveu-Schwarz, Green-Schwarz, or FAO-Schwarz[27)]), since the Shoparound matrix is invertible on the Burma module. This produces Landau ghosts which exactly cancel the Faddeev-Popov ghosts (which is fortunate, since the Soviet government doesn't officially recognize the existence of ghosts[28]). As a result, the Verysorry algebra (which is such afine algebra) can be nonlinearly realized on the interacting string field as a subgroup of the noncompact (via noncompactification) group SO(WHAT). Its grated extension O(4,CRYINGOUTLOUD) carries the entire super G-string as a (one-particle) irreducible representation. This result can be represented concisely in terms of the Stynkin diagram for averyffine SU(2)[29]:

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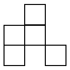
and its corresponding Old toblow:



The gauge-invariant field-theoretic string action then follows directly by the usual group theory constructions[30], and is therefore too trivial to discuss further here. This result can also be obtained by the application of the twistor calculus to supercocycles, but if you've ever worked with those formalisms you know it's not worth the trouble[31].

6. THIRD-QUANTIZED G-STRING

Due to the conformal symmetry of the super G-string, the third-quantized G-string is *the same* as the second-quantized one. The only difference is that still more parentheses are needed: e.g., Œ$\{\Phi[X(\sigma)]\}$. Here σ is a coordinate, $X(\sigma)$ is a function, $\Phi[X]$ is a functional, and Œ$\{\Phi\}$ is a functionalal, describing the wave (particle) function of the universe. The universe begins as 26-dimensional, collapsing to 10-dimensional[32], with extra entropy coming from the phonons produced by the crystalization of the resulting 16-dimensional lattice. (No entropy comes from the 6 dimensions compactified into Cabala-Now spaces[33] because it gets Killed by the vectors of the leggoamy group RU(CRAZY).) Above the Hagedorn temperature the lattice undergoes a phase transition to an amorphous solid, explaining the homogeneity of the early universe.

The lattice also regularizes ultraviolet divergences (giving a *third* proof of finiteness, hence third-quantization[34]), and can be used to apply Monte Zuma calculational techniques[13]. (We also have a *fourth* proof of finiteness, but it requires use of the light-cone gauge[35], and is thus beneath the scope of this article[36].) Since higher-order corrections are negligible, quenching is an accurate approximation. However, these methods are not applicable for the early phase of the universe, where the amorphous solid has not yet become a lattice, corresponding to the fact that strong-coupling lattice methods are not accurate for this weak-coupling phase. Since the super G-string contains fermions, the string's latticization also solves the long-standing problem of putting fermions on a lattice. Finally, the lattice is furthermore useful for studying group theory, since it automatically gives representations of the Greasy-Fish Monster group. We thus obtain the celebrated result$^{37)}$:

$$e^{4\pi\cdot 10} \gg \text{any reasonable number you know.}$$

7. FOURTH-QUANTIZED G-STRING

There's no such thing as fourth quantization, but if there were, it would be *the same* as the third-quantized one, due to the conformal symmetry.

8. CONCLUSIONS

Our conclusions were already stated in the abstract and introduction, so go back and read them again. We could tell you what we're going to do in our next paper, but since we've already done everything in this paper, there won't be one (unless, of course, we find yet another string model that we like even better, in which case we'll write a paper telling you what's wrong with this one).

ACKNOWLEDGMENT

One of us (W.C.G.) would like to thank Ronald Reagan, but the rest of us (V.G., E.K., M.R.) won't let one of us because the rest of us hate his guts.

In fact, we don't really want to thank anybody, but if we don't, they'll get mad. On the other hand, if they don't read this paper, they won't know we didn't acknowledge them. Therefore, we would like to thank (WRITE YOUR NAME HERE)$^{38)}$ for invaluable advice and encouragement.

NOTE ADDED IN PROOF

After this work was completed, we received a preprint, but we don't know who wrote it because we were so afraid they might have produced some of our results

We have found a proof of Fermat's last theorem using the super G-string, but it's too small to fit in this margin.

that we didn't even open the envelope. Besides, we don't want to have to share our Nobel prize with anybody. However, we will acknowledge the work of Isaac Newton[39)], because they don't award Nobel prizes posthumously. We have also heard that other people have done work along similar lines[40)], but failed miserably.

NOTE ADDED IN PROOF OF NOTE ADDED IN PROOF

We decided to open the envelope after all, but it turned out to be just another paper by you-know-who[41)], and we all know all his stuff is garbage, so we just threw it away.

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[41] He never references us, so we're not gonna reference him.