Synthetic Jerk and Analysis

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$$v^2 v''' - 9vv'v'' + 12v'^3 + \left(1 - \frac{v^2}{c^2}\right) v' \omega^2 v^2 = 0$$

The mass independent free space equation extracted from the double differential of mass in uncertain geometry and equation through oscillation to eliminate mass. Solving it can be assisted by a “synthetic jerk method” by the observation of a close match to some other equations.

$$v''' + \frac{(-9vv'v'' + 12v'^3)}{v^2} + \left(1 - \frac{v^2}{c^2}\right) v' \omega^2 = 0$$

$$v''' = \frac{-(-9vv'v'' + 12v'^3)}{v^2} - \left(1 - \frac{v^2}{c^2}\right) v' \omega^2$$

$$v''' = \frac{-(-12vv'\alpha v_S'' + 12v'^3)}{v^2} - \left(1 - \frac{v^2}{c^2}\right) v' \omega^2$$

$$v''' = -12\left[\frac{v'^{2\,\prime}}{v}\right] - \left(1 - \frac{v^2}{c^2}\right) v' \omega^2$$

This is less of a complex evaluation to perform for each step of the integration time stepping. The quantity alpha though must be taken into account to pre-scale the jerk before applying it to the acceleration integral. Alpha is $9/12^{th}$ or three quarters, and the correct integration can be done. Also the singular condition when v=0, can be easily solved by l’Hopital’s and limits. Then v, v’ and v’’’ all have to be zero. But v’’ can be any value. This “jerk freedom” is the origin of uncertainty in the above equation.

Quantity	Systematic Root Count	Implications
Velocity	Quartic	Divergence and entropy. A quad split in outflow.
Acceleration	Cubic	Always 3 effective mass genera are forced to happen.
Jerk	Linear	None yet known.
Jounce	Linear	None yet known.

There may be complex solutions using a 6^{th} root of unity as a scaling on 6 expected complex solutions due to just simply power order. Also the static inertial observation prospective is flawed. The observer must also be moving according to the equation if they are made of “real” stuff. The relativistic effects between the observer motion, and the observed then create (in a similar manor to relativistic magnetism), apparent forces. And something light to finish on, as perterbative expansion, and the question of what it means to travel at the speed of light in uncertain terms.

$$c^2 v''' - 9cv'v'' + 12v'^3 = 0$$

Ok, this seems to imply that the lower the acceleration is the easier it would be to go super c. Pure speculation but you never know.

Bosonic Solutions

The principal way, or only way observation happens is via forces to the observer in motion (4 roots), as the abstract rest frame is a tool of convenience, just as running constants are a tool of convenience for abstracting away some non linearity. The velocity roots, are really just energy roots when a square is applied, and to a scaling constant then solve the Yang-Mills mass gap problem.

So let’s start with the following fermionic mass solution base, and assume the other solutions introduced are anti-matter.

$$\left(v^2 v''' - 9 v v' v'' + 12 v'^3 + \left(1-\frac{v^2}{c^2}\right) v' \omega^2 v^2\right)^2 = 0$$

When observed from a relative prospective this gets an 18th order Lorentz factor. If the fermionic solutions are removed via subtraction, the remainder are the bosonic solutions, or observational forces. Strangely the fermionic solutions still exist, and perhaps indicate some kind of super-symmetry.

$$\left(v^2 v''' - 9 v v' v'' + 12 v'^3 + \left(1-\frac{v^2}{c^2}\right) v' \omega^2 v^2\right)^2 \left[\left(1-\frac{v_o^2}{c^2}\right)^9 - 1\right] = 0$$

The new observational roots added (or indirect observable masses), are now in the form of a cyclotomic, and can be split into further factors.

$$\left(1-\frac{v_o^2}{c^2}\right)^9 - 1 = \left(\frac{-v_o^2}{c^2}\right)\left(\left(1-\frac{v_o^2}{c^2}\right)^2 - \frac{v_o^2}{c^2}\right)\left(\left(1-\frac{v_o^2}{c^2}\right)^6 + \left(1-\frac{v_o^2}{c^2}\right)^3 + 1\right)$$

This gives group orders of 2, 4 and 12. This is a total of 18 bosonic solutions, or 72 coupling constants depending on which observational velocity is considered. This then gives the final total of 30 unique particles, or in cases of complex root pairs that could be together-icles. The 18th order Lorentz factor is much easier to deal with than a 9th order one due to the lack of a square root. A square root in a sense implies a duality, and so squaring it out leads to the duality being made explicit in that sense.

Questions on the Nature of Space

What is space made of? The vacuum energy density problem is solved by the particle being a rarerification of space. A flogesten of the post modern physics paradigm. The table of particulate emptiness takes the following form

And a Rubik with a Tits Group middle? And the middle 9 removed and marked Z(integers) and A(alternating)? Cubics and cohomology ha? Nope, I think it is the velocity squared that is a particle solution, as this is more in proportion to mass.

A Table for the Masses

This makes more sense as everything comes in pairs of solutions such as the bosons in positive and negative pairs, and the fermions in dual cloned solutions. The zero on the right hand side of the last equation is quite possibly not quite zero, and could be an eta to take into account some variance in omega (initial assumption in the theory model was that omega is a constant). This eta can perhaps also oscillate on the inequality. The main thing left to do is substitute the observational velocity as a relative on the particle velocity in the mass independent free space equation, using the velocity addition formula, and then solve the mass independent free space equation from this rest frame.

$$v_t = \frac{v_o + v}{1 + \frac{v_o v}{c^2}}$$

And that as they say “is it”. The equation is then the solution from an observer prospective in a nested fashion for abstractly analysing the observer. The actual velocity of the observed can then be calculated from the fact that the particle is “totally moving”, and the observer is “moving from the abstract”. The abstract rest frame is where “uncertainty was evaluated”.

$$\left(v^2 v''' - 9 v v' v'' + 12 v'^3 + \left(1 - \frac{v^2}{c^2}\right) v' \omega^2 v^2\right)^2 = MIFE_v^2$$

$$\left[\left(1 - \frac{v^2}{c^2}\right)^9 - 1\right] = CYC_v^9$$

So the following is done. This casts the bosonic part into an “observation frame” and who says that zero squared is closer to nothing than any other number times zero? It’s kind of in the logical none exclusive or’s nature.

$$MIFE_{self} \leq \tilde{\eta}$$
$$MIFE_{it}^2 \, CYC_{absObs}^9 \leq \tilde{\eta}$$
$$absObs = VSum(it, self)$$

The lower the energy or better the velocity prospect in the CYC bosonic part, the easier I’d say the “particle” is transmitted.

The units of the equation are m^3/s^6 or acceleration cubed. In the hierarchy of fixing constants and applying oscillation of uncertainty, then eta becomes dimensionless, and the MIFE can be normalized like so.

$$MIFE_v = \eta \left(\tilde{v}'\right)^3$$

And this shows the synthetic jerk method could be applied on either the 9 or 12 term, and slightly adjusted for the acceleration oscillation (or force uncertainty). The funny thing, after all this is does the three accelerations mean 3 separate particulate gravities? Hard to measure.

The Order of the Square

Perhaps it’s any multiple of two order, and not just squaring. This would of course add a nine set of bosons as the next group. Electric or hyper charge in any sense has not been added to this theory, this could explain the perfection of the cyclotomic roots, not bent by some other forces.

The eta term oscillation could also be frequency times velocity cubed.

Electric

So the Coulomb force has a characteristic energy in the field equation like the following, but wrote without division as the singularity is to be avoided and not useful in this instance. The charge and k are constants, and so the obvious applies.

$$(Er=kQ)\Rightarrow((Er)'=0)$$

In the theory of Uncertain Geometry (UG), mass oscillates and so energy follows suit. The RMS of energy is more like that which is measured. But this does imply total differentials have to be used, and that mass can not be considered a constant.

$$(E'r+Ev=0)\Rightarrow(r=-(\frac{Ev}{E'}))\Rightarrow(v=-(\frac{Ev}{E'})')$$

This gets us in the territory of UG. The energy relation of choice is the kinetic one as it involves velocity and mass.

$$(E=\frac{mv^2}{2})\Rightarrow(E=\frac{(\frac{ka}{v^3})v^2}{2})\Rightarrow(E=(\frac{ka}{2v}))\Rightarrow(E'=\frac{k}{2}(\frac{a}{v})')\Rightarrow(\frac{Ev}{E'}=\frac{a}{(\frac{a}{v})'})$$

The oscillatory substitution for mass includes a general constant which will go on the ratio of E and E’ in the Coulomb equation derivative. This then leads onto the further expansion in the total differential for the good time calculus.

$$[\frac{a}{(a/v)'}]'=-v$$

$$\frac{\frac{da}{dt}}{\frac{\frac{da}{dt}}{v}-\frac{a\frac{dv}{dt}}{v^2}}-\frac{a\left(-\frac{a\frac{d^2v}{dt^2}}{v^2}+\frac{\frac{d^2a}{dt^2}}{v}+\frac{2a\left(\frac{dv}{dt}\right)^2}{v^3}-\frac{2\frac{da}{dt}\frac{dv}{dt}}{v^2}\right)}{\left(\frac{\frac{da}{dt}}{v}-\frac{a\frac{dv}{dt}}{v^2}\right)^2}$$

And all that equals minus velocity. Wolfram is such a nice company. Now I have to “digitize” the bit map by hand. Hold on with a joke. “What do you call a company director of a company employing jerks? … The jounce!”

$$(\frac{2vvvv''x+v'(vv'v''-vvv'''-2v'v'v'+2vv'v'')}{xxvvv}=-v)\cup(x=\frac{v''v-v'v'}{vv})$$

Yes, more simplification required. Hold on the pen is active!!

$$\left(\frac{2vvvvv''x+vv'(vv'v''-vvv'''-2v'v'v'+2vv'v'')}{(xvv)(xvv)}=-v\right)\cup(xvv=v''v-v'v')$$

Yes, this looks like I’ll be able to raise the denominator, “I’m the one and only denominator..!”

$$2vv''(v''v-v'v')+v'(vv'v''-vvv'''-2v'v'v'+2vv'v'')\equiv(v''v-v'v')(v''v-v'v')$$

Yes, it does look like another jounce equation, and summing the resultant jounce looks like a combining process. I can already see the bosonic order is 12 (the number of Lorentz factors from observational bosons). This is a miss match from the MIFE. The jounce combining with common factors though … v squared on one hand, and v squared v’ on the other. After jounce unification, the MIFE will be multiplied by **v’** and the total jounce will divide by 2 (compared to the **[MICE + [v’MIFE]]** sum), as there is only “jounce” one in total.

GEM Equation for Unification

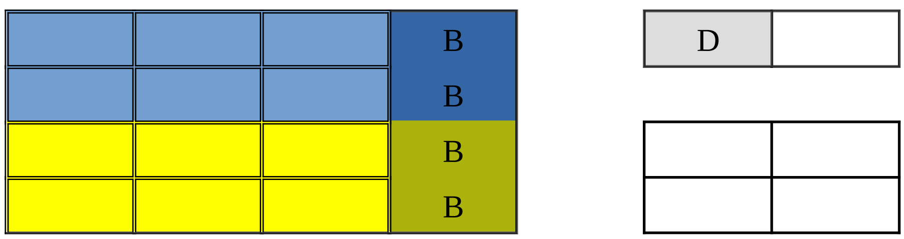
The union of gravity and mass theories into the EM domain has long been sought.

Quantity	Systematic Root Count	Implications
Velocity	Quartic	A quad “leptohadric”.
Acceleration	Cubic **(+v’ = Quartic)**	Always 3 mass genera. Plus “dark static genera”.
Jerk	Linear **((v”)^2 = Quadratic)**	Bipolar force fields. Parity?
Jounce	Linear	None yet known.

The extra **v’** term is a product factor with the MIFE, and so generates zeros at zero, and so the “dark sector” has one velocity set for an acceleration genera, “dark static leptohadric” kinds. On it’s own the MICE has the following

Quantity	Systematic Root Count	Implications
Velocity	Quadratic	Always 2 charge kinds.
Acceleration	Quartic	Always 4 effective charge genera are forced to happen.
Jerk	Quadratic	Bipolar fields.
Jounce	Linear	None yet known.

And so onto the GEM unification particle grid shape.



The 4 “never accelerating dark fermionic particles”. So 6 bosons minimum for no singularities. Some of these are unlikely soliton states. The “fact” of jounce summation having a possible offset in acceleration summation of the order of t squared given “wrong” initial conditions.

Jounce Mixing

The unification of jounce to feedback into integrations in both equations is not a current thing, as it does not really solve both equations "simultaneously" where the usual process of substitution would reduce the order of the resulting combined equation. It in effect equates the jounces to be in balance and so will never represent contributions of space-times contributing multiple inputs to a resultant based on the rigidity of the equation conformance.

The question of jounce representing a balance of force when it is the second differential of force is the accumulation of an offset in the force, and so an effective acceleration to feel. If it were not for the quantum size of the effect excluding it from the resultant of the particle aggregate nature of large objects. A jounce compliance multiplier may be appropriate for the conformance to uncertainty under uncertainty, and the conformance to coulomb under uncertainty.

The zero acceleration solutions will be mixed and hence pulled away from the pure separation and asymptotic zero. This might be helpful in the generalization of the particle properties from the unification through jounce.

GEM	Estimated Mendeleev Properties
B	Hardly any acceleration coupling, without decay. The dark genera.
D	I think this is the photon. Maximal resonances when relative velocity is zero.

The acceleration at zero (B), is more indicative of lack of uncertainty "force coupling" and only Coulomb coupling, though it might not be electrical in nature. The yellow row is indicative of a neutrino row, as one row is in MIFE but not in MICE. The yellow "dark neutrino" is likely very elusive. Any delta **v'** from Coulomb coupling would be of low acceleration, and hence another high prediction of mass (if in anyway stable), not showing much acceleration of movement before decay into more accelerative forms. Is "shear dark decay" a thing?

Strong is Wrong?

$$(F=kr)\Rightarrow(E=kr^2)\Rightarrow(E'=krv)\Rightarrow(\frac{E'}{v}=kr)\Rightarrow((\frac{E'}{v})'=kv)\Rightarrow((\frac{(a/v)'}{v})'=kv)$$

$$\frac{v^2\,\frac{d^2a}{dt^2}-a\,v\,\frac{d^2v}{dt^2}-3\,v\,\frac{da}{dt}\,\frac{dv}{dt}+3\,a\left(\frac{dv}{dt}\right)^2}{v^4}$$

And all that equals some constant times v. Let's collect terms and digitize that. It does look like some constant will be included make for the k value, and this is "the strong constant" for what else would it be called?

$$k_s vvvvv=vvv'''-v'vv''-3vv''v'+3v'v'v'$$

Quantity	Systematic Root Count	Implications
Velocity	Quintic	Always 5 strong charge kinds.
Acceleration	Cubic	Always 3 effective strong charge genera.
Jerk	Linear	None yet known.
Jounce	Linear	None yet known.

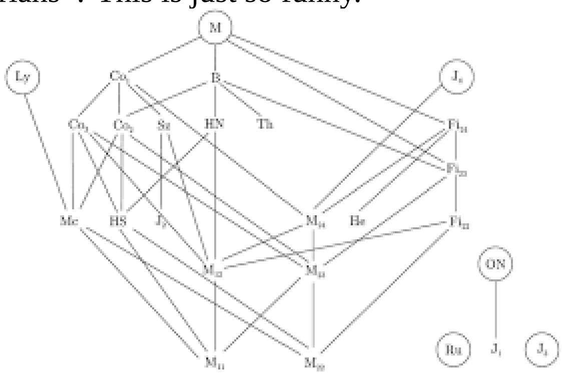
The first thing to notice is there is no extra particle introduction via factors as the jounce term is a factor of the other jounce terms. So the boson count remains at 6. The unification requires the strong MISE to be **v'** multiplied, so getting the “dark sector”. An extra “leptohadric” kind is also introduced by the strong force.

			B
			B
			B
			B
A	A	A	B

1	2

3_1	6_1
3_2	6_2

So for a total of **26** particles? I wonder if the weak force is included in the interactions? I wonder why there are 6 bosonic “pariahs”? This is just so funny.



Constants

The actual constants of integration mean that the MICE actually solves for a super set of the Coulomb force. The **1/r** energy well is actually a **1/(r-C)** and something similar goes for other unifications. Slight differences in the integration constants lead to some possibly consistent extra force laws. The division by **v** in the Coulomb unification removes the singularity of infinite mass energy with no motion. The **units** of **k**$_s$ should be **seconds**, and so it represents a time constant.

The thing with this interpretation of the strong force is the required mechanism for why things with no associated colour charge can leave the nucleus. Perhaps it is better to first principal strong forces, and go inverse cubic, and have an energy density model for decomposition. A dipole of inverse square would give inverse cubic, so there is always the idea that the strong force is emergent.

$$(F=kQ/r^3)\Rightarrow(Er^2=kQ)\Rightarrow(E'r^2=-2Erv)\Rightarrow\left(r^2=\frac{-2Erv}{E'}\right)\Rightarrow\left(r=\sqrt{\frac{-2Erv}{E'}}\right)\Rightarrow\left(v=\left(\sqrt{\frac{-2Erv}{E'}}\right)'\right)$$

There is from the above the nature of complex numbers. But a full quadratic solve on r would be required to get the equation in a suitable form. Alternatively it can be noticed that

$$(E'r^2=-2Erv)\Rightarrow(E'r=-2Ev)$$

And this division through by r not at zero gives the Coulomb derivation, implying an emergence, and no A group mass genera, with a minor adjustment. And genericising the 2.

$$2vv''(v''v-v'v')+v'(vv'v''-vvv'''-2v'v'v'+2vv'v'')=-n(v''v-v'v')(v''v-v'v')$$

“3A or not 3A, that is the question?” Optimal **n**, and should this be the Coulomb index?

The Coulomb Index

In a manor similar to power series approximation, the value of **n** can be non integer. The expected result would then be an approximation to a sum of power laws to different summation. This is a whole new branch of modelling in itself. For zero and negative **n** the results could be just as interesting, especially at 0 where the singular log usually sits. In many ways my mind is as easy with 22 particles as 26, and providing a “kick” of energy, mostly absorbed by the escape from the nucleus is not beyond possibility. “Maybe most of the kick of weak decay is absorbed by the massive avoiding the quark game.”

Another “repulsive” force which goes up by distance? I think dark energy is one such candidate. So too early to give up on the A part of the “dark sector”. When **n** is minus two then there is proof that there is more than one way to oscillate over a force gradient. So the maths does not have a unique mass independence equation for some, and maybe all force fields. Fields can be generated by multiple particle mechanisms.

It maybe that such fields are equivalent, with different secondary integral fields (or maybe even the same constants of integration, who knows?), and can be used to simplify certain equations, or reduce particle count via approximation. It’s all a very open set of questions.

For Fun

The inverse law, with log field is quite an energy-velocity equation.

$$v=[e^{((\frac{Ev}{E'})'\frac{1}{v}-1)}]'$$

But as there is nothing I know of fundamentally which needs such a law, there is no reason for me to calculate it further. I leave it as an exercise to the reader. It shouldn’t be too hard to cheat with Mathematica on a Pi.

Quadratic Jerk

The implication that quadratic jerk makes a bipolar field is likely false. More likely as the jounce makes for the same change in the two jerks is that the field is a bi-field, which is to say a pair of fields. The application of jounce instead of acceleration becomes hidden in a second order oscillation, presenting minor adjustments seen as auxiliary force fields and effects. To find the primary equation which has all the features required? It sounds like a computational factorization problem.

Calculus and Linearity

I’m finding it interesting at the moment to consider the operator calculus when pre and post functional mapping are performed before and after differentiation, and symmetrically when a self inverse is used with integration. My current experiment is with reciprocal in the w.r.t. variable pre differentiation, with a multiply by it post. This has the effect of reducing the linear to zero, a correlation null, and making integration deterministically defined as a series for all functions. Also the contravariant pre multiply by the w.r.t. and post divide by it has a deterministic poly-logarithm series when “integrated”. Think $\mathbf{x_a=x_b+vt}$ where the linear **vt** is well not too relevant.

Or opposite, but the post transform is more relevant on integration (when reversed), and would be best selected to simplify integration or have a better meaning. It would be like information preserving in some way, but eliminate the indeterminacy of certain integrals. Not sure if this gets anywhere further but it popped into mind.

$$\left(\frac{f(x)}{x}\right)' x = f'(x) - \frac{f(x)}{x}$$
$$\frac{(x f(x))'}{x} = f'(x) + \frac{f(x)}{x}$$
$$\int x^n f(x) = \frac{x^{n+1}}{n+1} f(x) - \int \frac{x^{n+1}}{n+1} f'(x) = \sum_{k=0}^{\infty} \frac{(-1)^k n!\, x^{n+k+1} f^{(k)}(x)}{(n+k+1)!}$$
$$\int \frac{f(x)}{x} = f(x)\ln x - \int \ln x f'(x)$$
$$\int \ln x f(x) = f(x)(x - x\ln x) - \int x f'(x) + \int x \ln x f'(x)$$
$$\int x \ln x f(x) = x \int \ln x f(x) - \int \int \ln x f(x) = \ln x \int x f(x) - \int \frac{1}{x} \int x f(x)$$

As this is not a series fit expansion, but an actual expansion via recursion, the functional $f^{(n)}(x)$ is deterministic, and so is the series. There is some beautiful symmetry in the above equations. For ANY function ***f***. The potential increasing complexity of the differentials as the order goes up is perhaps best analysed by some series acceleration methods adapted for specific bound properties of differential orders.

The last three lines imply a closed for sum, likely a double sum for simplicity of expression. The last expression on the last line shows such, and is a closed form expression for the maximal complexity of any "integrative" function. Kind of a "Y combinator" on the recursion, as the last double integral has no Laurent series terms, and hence "Cauchy winding" can be ignored.

Closure of Integration

This then creates a parametrized operator in **n** and **f** (and perhaps a number of times pre-differentiated **d**) suitable in the same way as power series methods for all classes of differential equation. The multiple differentiation of the integral operator is then necessary for applying the operator to itself a number of times, with some base function terminating the recursion. The "measurable function" (to terminate the recursion) with the integration complexity operator carried out to the order of the number of integrations, and any products and powers, should in theory give the maximal complexity of a solution to a non-linear differential equation.

This then implies there is no known method of representing the **ln** function as a series summation polynomial which is general over all values of its input range. I think this is very closely related to the **P!=NP** problem, and careful use of phrases like "half plane" and "convergence annulus" for some obvious lack of convergences in some annular rings.

$$\int \frac{x f(x)}{x} = \sum_{k=0}^{\infty} \frac{(-1)^k x^{k+2} (f(x)/x)^{(k)}}{(k+2)!}$$
$$\int \frac{x f(x)}{x} = x f(x) \ln x - \int \ln x (x f(x))'$$

$$\int \ln x(xf(x))'=(xf(x))'(x-x\ln x)-\int x(xf(x))''+\int x\ln x(xf(x))''$$

$$\int f(x)=xf(x)\ln x-(xf(x))'(x-x\ln x)+\sum_{k=0}^{\infty}\frac{(-1)^k x^{k+2}(xf(x))^{(k+2)}}{(k+2)!}-\int x\ln x(xf(x))''$$

$$\int x\ln x(xf(x))''=\ln x\int x(xf(x))''-\int\frac{1}{x}\int x(xf(x))''$$

$$\int x\ln x(xf(x))''=\ln x\sum_{k=0}^{\infty}\frac{(-1)^k x^{k+2}(xf(x))^{(k+2)}}{(k+2)!}-\sum_{k=0}^{\infty}\int\frac{(-1)^k x^{k+1}(xf(x))^{(k+2)}}{(k+2)!}$$

$$\int f(x)=xf(x)\ln x-(x-x\ln x)[(xf(x))'-\sum_{k=0}^{\infty}\frac{(-1)^k x^{k+1}(xf(x))^{(k+2)}}{(k+2)!}]+\sum_{k=0}^{\infty}\int\frac{(-1)^k x^{k+1}(xf(x))^{(k+2)}}{(k+2)!}$$

And a bit more fiddling about still to do, for the log form of integrals.

$$\int f(x)=xf(x)\ln x-(x-x\ln x)[\sum_{k=0}^{\infty}\frac{(-1)^k x^k(xf(x))^{(k+1)}}{(k+1)!}]+\sum_{k=0}^{\infty}\int\frac{(-1)^k x^{k+1}(xf(x))^{(k+2)}}{(k+2)!}$$

Maybe I'll do the final integral part soon. It really is just a function by a power multiplication series.

$$\sum_{k=0}^{\infty}\frac{(-1)^k}{(k+2)!}\int x^{k+1}(xf(x))^{(k+2)}=\sum_{k=0}^{\infty}\frac{(-1)^k}{(k+2)!}\sum_{j=0}^{\infty}\frac{(-1)^j(n+1)!x^{n+j+2}(xf(x))^{(j+2)}}{(n+j+2)!}$$

$$\int f(x)=xf(x)\ln x-(x-x\ln x)[\sum_{k=0}^{\infty}\frac{(-1)^k x^k(xf(x))^{(k+1)}}{(k+1)!}]+\sum_{k=0}^{\infty}\frac{(-1)^k}{(k+2)!}\sum_{j=0}^{\infty}\frac{(-1)^j(n+1)!x^{n+j+2}(xf(x))^{(j+2)}}{(n+j+2)!}$$

And this log form should be identical to the other form. The maths on this does need checking to see if I haven't dropped a sign or constant. It is interesting though that all integrals should have the above form, and all the complexity in the function is defined in the differential series. So the answer is that all integrals have a pure series part and a log part (which may be also expressed as a series of poles in the other form).

Seems something ate the non image (non PDF) form of the document. "Dog ate my homework?"

$$\int f(x)=xf(x)\ln x-(x-x\ln x)[\sum_{k=0}^{\infty}\frac{(-1)^k x^k(xf(x))^{(k+1)}}{(k+1)!}]+\sum_{k=0}^{\infty}\frac{(-1)^k}{(k+2)!}\sum_{j=0}^{\infty}\frac{(-1)^j(k+1)!x^{k+j+2}(xf(x))^{(j+2)}}{(k+j+2)!}$$

I'm sure I must have saved all that quite a few times, and not left it in such an incomplete save.

So Integration becomes Deterministic

The fact that integration is computationally considered hard due to the application of heuristics, and an algorithm is thus by no means certain to terminate on the most simplified form, leads to generation of formula, that although complex, are fully deterministically expandable, and say "v" may be of such a form. This allows power series methods, such as Euler summation (good for alternating series), to be applied to do a simplification post integration. It in essence removes the "difficulty of integration" and replaces it with deterministic symbolic manipulation.

There is no solve fail, as the hard part is now simultaneous equation solving and factorization, to reduce the summations to know products and simplified hypergeometric functions. An entropic (***x ln x***) and a linear part, which is somewhat interesting, especially the connection to the pole series without logarithms. The fact that binomials also "pop up" in the ***xf(x)*** differential expansions as well as in Euler summations, suggests some kind of operator based on the general function ***f*** for a simplified notation for symbolic processing. (And n = k of course).

Some Possible Interesting Number Theory

So given this integral generalization it seems the following might be interesting to do.

$$\int \frac{dx}{\ln x}$$

And also it is of note given some form of the Hurwitz Zeta function and similar (a long stretch), that complementary integration functions might be defined. With better index ranges and minimizing superfluous additions. The rest is just some juggling of symbols.

$$a(x)=\sum_{k=1}^{\infty}\frac{(-1)^k x^k (xf(x))^{(k)}}{k!},\ b(x)=\sum_{k=1}^{\infty}\frac{1}{(k+1)}\sum_{j=1}^{\infty}\frac{(-1)^{k+j}x^{k+j}(xf(x))^{(j+1)}}{(k+j)!}$$

Other interesting series might arise from the initial consideration of the integral form as follows.

$$\int e^x f(x) e^{-x}\,dx$$

But this is really just a log transform away from the above.

Accelerations and Unification

It occurred to me that other unification possibilities exist to incorporate forces and accelerations. As it stands the distinction is moot, as the higher quark matter does not exist beyond experiencing a differing acceleration, which is attributed to mass to create a normal conservation field set. So force fields can be unified as acceleration fields without some much as an error apart from perhaps strange matter (charming!). The perhaps is quite important there, as delta t is quite small.

$$mv^3=-ka+C$$

Let that sink in a little, where C is an acceleration, considered to be zero in uncertain geometry so far. As the MIFE was derived by differentiation of the above with C at zero, and using substitution and mass oscillation equations to solve independent of mass, then putting C not at zero, would also lead to a little set of differences. Also if forces are force based and not acceleration based, then C maps to C/m, and I’m sure that can be solved too.