

M-set hyperbolic components tuning the matter /dark matter / dark energy pie chart ?

(F.J. Culetto and W. Culetto, Private Research-Associates, Int. Report, dated: Oct. 2015)

Mandelbrot set's universality/structural stability is pretty likely to play some role in case of a tentative description of all things / structures and the dynamics there are by using Julia set fractals and their control spaces/ connectedness loci (for the second order polynomials iterated the main and midget Mandelbrot M sets). According to A. Douady (in H.O. Peitgen and P.H. Richter: *The Beauty of Fractals*, 161-173 (1986)), all of M's combinatorial features are preserved if the (holomorphic) function $F(z)$ iterated (properly rescaled, 0 trapped in a bounded region) just differs from $(z^2 + c)$ by < 1 for all values of z , and the complex parameter c does not exceed 4 in modulus.

As period $k = 2^0$ oscillations belong to c -values from the Mandelbrot set's big cardioid, and integer (el.)charge quantization most likely is linked to the cardioid cusp's external angles $(0,1)$, conventional integer charged and neutral *matter's approximate pie chart share* from the Λ CDM-model could possibly emerge from an area-ratio involving the $k = 1$ hyperbolic component's area A_2^0 which is $3\pi/8$ (from cardioid area $(3\pi a^2/2, 2|a| = 1$, the cusp located at $c = 1/4 + 0i$). Indeed, the area ratio of the doubly covered said cardioid and the difference area between the maximally permissible c -disk ($A_{c-disc} = 16\pi$) and twice the cardioid, i.e. $2A_2^0 / (A_{c-disc} - 2A_2^0)$, would be $0.049180\dots$ compared with matter's 4.9% pie chart share.

And non-conventional, neutral matter's pie chart share from an integer charge quantization point of view also ought to be linked to a period- 2^0 cardioid area, but this time to a variably inflated, "virtual" one. By stretching the matter-linked M cardioid's $|a|$ from $1/2$ to $(|c_D| - 1/4)$, c_D being the main bifurcation series Myrberg-Feigenbaum point's coordinate $-1.401155\dots + 0i$, the stretched area e.g. becomes $A_{2^0-infl} = 3\pi(1/4 + c_D)^2/2$ and the cardioid's left end eventually is $-2.052\dots$, slightly outside M set's real axis $[-2, 1/4]$. Accounting for fermion spin by doubly covering the original and the inflated cardioid areas, the following areas' ratio is

$$\frac{2(A_{2^0-infl} - A_2^0)}{A_{c-disc} - 2A_{2^0-infl}} = 0.268241\dots, \quad \text{Eq.(1)}$$

compared with the *dark matter's pie chart share* of 26.8%. And in the flat space-time case the still missing pie chart piece is

$$1 - \frac{2A_2^0}{A_{c-disc} - 2A_2^0} - \frac{2(A_{2^0-infl} - A_2^0)}{A_{c-disc} - 2A_{2^0-infl}} = 0.682578\dots, \quad \text{Eq.(2)}$$

almost matching *dark energy's pie chart share* of 68.3%. Just lucky coincidences... ? Component shares' time dependence may i.a. well come from c -disc's radii variation.