

SQUEMATHIC APPARATUS FOR DETECTING THE SHRINKAGE OF MATTER

This device is based in the SMTwVSL (Shrinking Matter Theory with Variable Speed of Light) (1). This is an answer to the most challenging question that can be asked about a theory, which is: How can we test this theory?

In this case, we can ask:

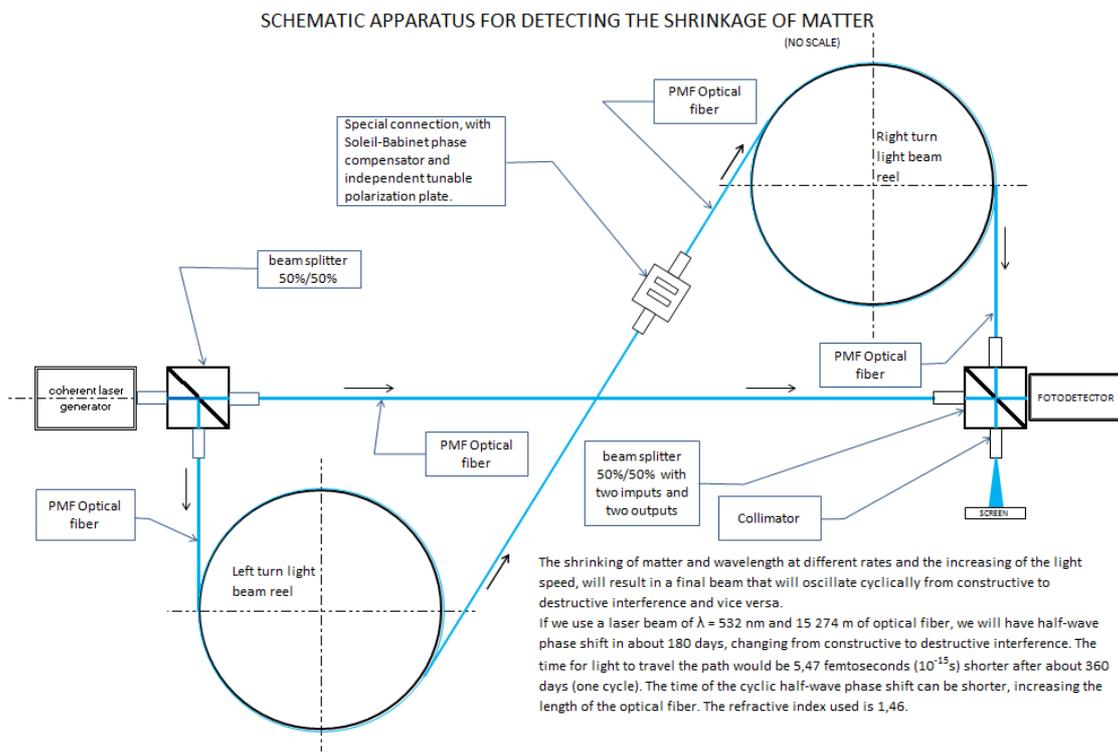
How may one test if matter shrinks or not?

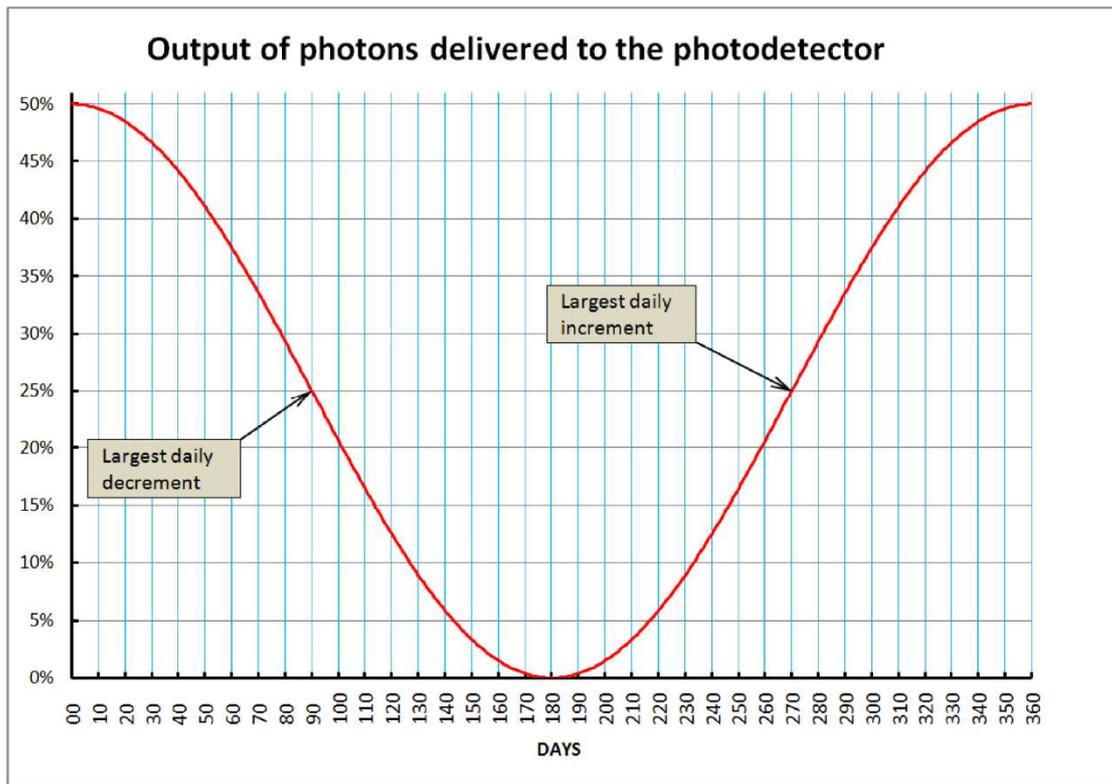
The device for detecting matter shrinkage must be based on interferometry technology.

The arrangement of the apparatus is similar to the old “Michelson-Morley experiment”, but the mirrors are replaced by optical fibers with another beam splitter to join the two beams from the first beam splitter. The introduction of new technologies in the production of the coherent laser beam, in the phase and polarization control and in the photodetector is essential for the proper functioning of the equipment. A room with strict temperature control is required.

The large difference in the length of the two optical fiber results in a build-up of photons inside the larger optical fiber. The shrinking of the optical fiber and wavelength at different rates, combined with the increasing light speed, result in a decreasing in the accumulation of photons, changing the interference pattern in the output of the second beam splitter.

The length of the large optical fiber was adjusted in this project to give one phase-shift in 360 days, to simplify the analysis, resulting in a phase shift rate of one arc grad per day.





To take fast results we could adjust the phase compensator to obtain the largest day decrement, with measurable results in one day. The change in the largest daily decrement position is about 0,87% per day.

It is worth noting that this result is dependent on the Hubble constant. The constant “ K_A ” is proportional to the inverse of the Planck constant (h^{-1}), so this device would serve to definitively end the eternal tension of this constant, which in any case would no longer be used.

This apparatus can detect the shrinkage of matter at any rate it occurs. If the shrinkage does not happen, the amount of photons delivered to the photodetector will be constant at any time.

Table from SMTwVSL (1)

Formulae table for Shrinking Matter Theory with Variable Speed of Light (SMTwVSL)

Symbol	Basic equation	SMTwVSL formulae		Variation rate per year at present	
		Variation in function of Z	Variation in function of t		
c (m/s)	$c = \frac{1}{\sqrt{\epsilon_0 \mu_0}}$ [11]	$c_{(t)} = c_{(0)}(1+Z)^{-1/3}$	$c_{(f)} = c_{(0)} \left[\frac{t+K_A}{K_A} \right]^{-1/2}$	past	-2,420 419 420 445 80E-11
				future	2,420 419 420 445 80E-11
Z	$Z = \frac{\lambda_{obsv} - \lambda_{emit}}{\lambda_{emit}}$ [15]	-----	$Z = \left[\frac{t+K_A}{K_A} \right]^{3/2} - 1$	past	7,261 258 261 337 39E-11
				future	-7,261 258 261 337 39E-11
t (Gyr)	-----	$t_{(f)} = K_{(A)}[(1+Z)^{2/3}-1]$	-----	-----	-----
D (Gly)	-----	$D_{(f)} = 2K_{(A)}[(1+Z)^{1/3}-1]$	$D_{(f)} = 2K_{(A)} \left\{ \left[\frac{t+K_A}{K_A} \right]^{1/2} - 1 \right\}$	-----	-----
				-----	-----
r (m)	$r_n = \frac{n^2 \hbar^2}{2k_e e^2 m_e}$ [10]	$r_{(t)} = r_{(0)}(1+Z)^{2/3}$	$r_{(f)} = r_{(0)} \left[\frac{t+K_A}{K_A} \right]$	past	4,840 838 840 891 59E-11
				future	-4,840 838 840 891 59E-11
λ (m)	c / ν [10]	$\lambda_{(t)} = \lambda_{(0)}(1+Z)$	$\lambda_{(f)} = \lambda_{(0)} \left[\frac{t+K_A}{K_A} \right]^{3/2}$	past	7,261 258 261 337 39E-11
				future	-7,261 258 261 337 39E-11
ν (Hz)	c / λ [10]	$\nu_{(t)} = \nu_{(0)}(1+Z)^{-4/3}$	$\nu_{(f)} = \nu_{(0)} \left[\frac{t+K_A}{K_A} \right]^{-2}$	past	-9,681 677 681 783 19E-11
				future	9,681 677 681 783 19E-11
ϵ_0	$\epsilon_0 = \frac{1}{\mu_0 c^2}$ [11]	$\epsilon_{(t)} = \epsilon_{(0)}(1+Z)^{2/3}$	$\epsilon_{(f)} = \epsilon_{(0)} \frac{t+K_A}{K_A}$	past	4,840 838 840 891 59E-11
				future	-4,840 838 840 891 59E-11
α	$\alpha = \frac{e^2}{2\hbar\epsilon_0 c}$ [12]	$\alpha_{(t)} = \alpha_{(0)}(1+Z)^{-1/3}$	$\alpha_{(f)} = \alpha_{(0)} \left[\frac{t+K_A}{K_A} \right]^{-1/2}$	past	-2,420 419 420 445 80E-11
				future	2,420 419 420 445 80E-11
k_e	$k_e = \frac{1}{4\pi\epsilon_0}$ [13]	$k_{e(t)} = k_{e(0)}(1+Z)^{-2/3}$	$k_{e(f)} = k_{e(0)} \left[\frac{t+K_A}{K_A} \right]^{-1}$	past	-4,840 838 840 891 59E-11
				future	4,840 838 840 891 59E-11
E	$E = -\frac{Z^2 (k_e e^2)^2 m_e}{2 \hbar^2 n^2}$ [10]	$E_{(t)} = E_{(0)}(1+Z)^{-4/3}$	$E_{(f)} = E_{(0)} \left[\frac{t+K_A}{K_A} \right]^{-2}$	past	-9,681 677 681 783 19E-11
				future	9,681 677 681 783 19E-11
σ_w	$\sigma_w = \frac{\hbar c}{x k}$ [14]	$\sigma_{w(t)} = \sigma_{w(0)}(1+Z)^{-1/3}$	$\sigma_{w(f)} = \sigma_{w(0)} \left[\frac{t+K_A}{K_A} \right]^{-1/2}$	past	-2,420 419 420 445 80E-11
				future	2,420 419 420 445 80E-11
T	$T = \frac{\sigma_w}{\lambda}$ [14]	$T_{(t)} = T_{(0)}(1+Z)^{-4/3}$	$T_{(f)} = T_{(0)} \left[\frac{t+K_A}{K_A} \right]^{-2}$	past	-9,681 677 681 783 19E-11
				future	9,681 677 681 783 19E-11
R_∞	$\frac{1}{\lambda} = R_\infty \left(\frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$ [10]	$R_{\infty(t)} = R_{\infty(0)}(1+Z)^{-1}$	$R_{\infty(f)} = R_{\infty(0)} \left[\frac{t+K_A}{K_A} \right]^{-3/2}$	past	-7,261 258 261 337 39E-11
				future	7,261 258 261 337 39E-11
r_s	$r_s = \frac{2 G M}{c^2}$ [16]	$r_{s(t)} = r_{s(0)}(1+Z)^{2/3}$	$r_{s(f)} = r_{s(0)} \left[\frac{t+K_A}{K_A} \right]$	past	4,840 838 840 891 59E-11
				future	-4,840 838 840 891 59E-11

- 10) Bohr_model
- 11) Vacuum_permittivity
- 12) Fine-structure_constant
- 13) Coulomb_constant
- 14) Wien_displacement_constant
- 15) Redshift
- 16) Black_hole

$C_{(0)} =$	299 792 458	m/s
$K_{(A)} =$	20.657 582 148 185 686	(h ⁻¹)
$h \equiv H_0 =$	71 km/s/mpc,	already within the value
$t:$	(Gyr)	(for future, time "t" must be negative in the formulae)

Reference:

1. da Mota Filho, Azor Romão. <https://vixra.org/abs/2205.0001>. <https://vixra.org>. [Online] 30 de 10 de 2023.