Dark Matter
Bosons and Fermions

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Abstract: J8.00008

Note scope of research

- The Standard Model

	TSM	Here	Here
List known elementary particles	yes	yes ?	
Explain gravitation	no	yes	
Explain dark matter	no	yes	
Explain dark energy	no	yes	
Explain rate-of-expansion changes	no	yes	
Compute Higgs boson mass	no ?	yes	
Suggest neutrino masses	no	yes ?	
Explain matter/anti-matter ≠ 1	no ?	yes ?	
Explain size of CP violation	no	yes ?	
Provide other predictions	?	yes	

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Summarize some findings

- The universe includes 24 ensembles of similar stuff.
  - Baryonic matter is 1 ensemble.
  - Each ensemble has its own “traditional” elementary particles, except gravitons.
  - “Beings” in each ensemble could …
    - Measure their ensemble’s elementary-particle properties and obtain results similar to results we state for our ensemble’s particles.
    - Consider that there are 5 ensembles of “dark matter” and 18 ensembles of “dark energy.”
    - Know that their ensemble shares “gravity” with the 5 ensembles they consider to be “dark matter.”

Summarize some findings

- $(4/3)(B^6)^2 = \{(q_e)^2/(4\pi\varepsilon_0)\} / \{G_N(m_e)^2\}$

- $B \approx m_{\text{tauon}} / m_e$
- $B \approx e^{3e} - 3$
- $m_{\text{Higgs boson}} \approx (17/9)^{1/2}\, m_{\text{Z boson}} \approx 125.325\ \text{GeV}/c^2$
- $m_{\text{neutrino 3}} \approx m_e\, B^{-1}\, \alpha^{3/2} \approx 0.09161\ \text{eV}/c^2$

Provide some details

- "Ride along with a photon"
  - Quantum-mechanical approach
  - 4 harmonic oscillators – n_x , n_y , n_z , and n_t .
  - 4 p-space axes – p_1 , p_2 , p_3 , and p_4 .
  - For p_4 matched with n_t , 6 matches exist.
    - 6 = 1 + 5
    - For example, baryonic matter + dark matter

Provide some details

- Photon
  - Ground state - < # , 0 , -1 , -1 >
  - Excited state - < # , 1 , -1 , -2 >
  - $n_x + n_y + n_z + n_t + (4/2) = 0$
- $< \ldots , n_6 , n_5 , n_x , n_y , n_z , n_t >$
- Graviton
  - Ground state - < # , 0 , #, #, -1 , -2 >
  - Excited state - < # , 1 , #, #, -1 , -3 >
  - $n_6 + n_5 + n_x + n_y + n_z + n_t + (6/2) = 0$

Summarize some findings

- 10 e-family bosons (χeC)

	X	4	3	2	1		
C							Span (ensembles)
4		4e4 photon					1
3		4e3 graviton	3e3				6
2		4e2	3e2	2e2			12
1		4e1	3e1	2e1	1e1		24
	Force	r^{-2}	r^{-4}	r^{-6}	r^{-8}		

Discuss possible objections

- Interpretations of cosmic microwave background (CMB) data
  - Timeless ratios of 1:5:18 for BM:DM:DE
  - It takes time for dark-energy clumping to impact baryonic-matter photons
- Negative quantum numbers for harmonic oscillators
  - In 3 dimensions, $\Psi \sim r^{-1} \cdot \exp(-(r/\lambda)^2)$ normalizes
- 24 ensembles
  - Could be 48, but can people detect the other 24?

Note scope of research

- Here

	TSM	Here	Here
List known elementary particles	yes	yes ?	
Explain gravitation	no	yes	< # , 1 , #, #, -1 , -3 >
Explain dark matter	no	yes	5 ensembles
Explain dark energy	no	yes	18 ensembles
Explain rate-of-expansion changes	no	yes	3e3 (0.5 ≥ z), 2e2 (2.3 ≥ z ≥ 0.7)
Compute Higgs boson mass	no ?	yes	≈ 125.325 GeV/c^2
Suggest neutrino masses	no	yes ?	≈ 0.09161 eV/c^2 , …
Explain matter/anti-matter ≠ 1	no ?	yes ?	
Explain size of CP violation	no	yes ?	
Provide other predictions	?	yes	

Note some implications

- Dark-matter “beings” would consider us to be part of [their] “dark matter.”
- Dark-energy “beings” would consider us to be part of [their] “dark energy.”

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Reference

- *Physics Small and Vast: Complementing the Standard Model*