How to Read and Use This Data: A Simple Guide

Evan Wesley - Vivi The Physics Slayer!

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This dataset presents a compact, integer-based encoding of fundamental physical constants—structured like a **"Periodic Table of Constants."** All values are derived from whole numbers and modular arithmetic, revealing hidden patterns and enabling exact reconstruction.

The Core Idea

Every physical constant is approximated by a large integer k (its "atomic number") scaled by a Circular Ball/Universal quantum unit U:

$$\text{Constant} \approx k \cdot U$$

where the Circular Ball/Universal unit is defined as:

$$U = \frac{1}{49 \cdot 50 \cdot 137^6}.$$

Most entries use depth $p = 6$, meaning the denominator includes 137^6. A few (e.g., the upper bound on $\bar{\theta}_{\text{QCD}}$) use higher depth and are noted accordingly.

This formulation allows physical constants to be represented exactly as integers, with extremely small relative errors (often below 10^{-15}).

The Two Tables

1. Master Table (`Output Data EZ Read.txt`)

This table lists the encoded constants:

Sector: Category of the constant (e.g., `CORE`, `CKM`, `HIGGS/YUKAWA`)

Symbol: Standard physics notation

Value: Experimental or best-fit numerical value

k **(Atomic Number)**: The integer that encodes the constant

Relative Error: Accuracy of the approximation $k \cdot U$ vs. the true value

Appendix: Full Tables

Master Table (`Output Data EZ Read.txt`)

Columns: Sector | Symbol | Value | k (Atomic Number) | Relative Error

Sector	Symbol	Value	k (Atomic Number)	Relative Error
CORE	¹ (CODATA)	137.035999207	2219852703392369647	1.37e-19
CORE	¹(MZ,eff)	127.955	2072749163039352758	1.21e-19
CORE	sin²_W(MZ,MS)	0.23122	3745543835551242	5.31e-17
CORE	/e mass	206.768283	3349449302734039554	4.48e-20
CORE	/ mass	16.816706	272414624567846991	6.88e-19
CORE	p/e mass	1836.15267343	29743924950681899968	8.95e-21
CORE	a_e (leptonic)	0.001159652181	18785261127619	8.68e-15
CORE	a_ (exp)	0.0011659206	18886803546718	1.58e-14
CORE	(models)	5.02501e-7	8140037726	5.17e-11
CORE	c (models)	6.8842637e-5	1115185168404	2.67e-13
MASS RATIOS	/e	3477.161425	56326704185983339375	8.63e-21
MASS RATIOS	/p	0.112609526	1824167102878840	1.08e-16
MASS RATIOS	/p	1.893721299	30676481863985203	1.33e-17
MASS RATIOS	e/p	5.446170e-4	8822277171392	1.05e-14
MASS RATIOS	e/	0.004836331	78343968325123	1.14e-15
MASS RATIOS	e/	2.875909e-4	4658698815637	9.29e-14
MASS RATIOS	p/	8.880243366	143851486887289672	1.17e-18
MASS RATIOS	p/	0.528060808	8554082285037847	2.80e-19
CKM	|V_ud|	0.97435	15783542237563154	5.23e-18
CKM	|V_us|	0.22501	3644947748626351	4.68e-17
CKM	|V_ub|	0.003732	60454846441818	5.47e-15
CKM	|V_cd|	0.22487	3642679881932392	7.78e-17
CKM	|V_cs|	0.97349	15769611056443121	1.56e-17
CKM	|V_cb|	0.04183	677606170059287	6.66e-16
CKM	|V_td|	0.00858	138987830244052	1.52e-15
CKM	|V_ts|	0.04111	665942855633213	2.64e-16
CKM	|V_tb|	0.999118	16184760253820109	7.35e-19
CKM	J_CKM	3.12e-5	505410291797	8.86e-13
CKM		0.22501	3644947748626351	4.68e-17
CKM	A	0.826	13380413494357433	2.24e-17
CKM		0.1591	2577268507206135	6.01e-17
CKM		0.3523	5706924544869399	3.77e-17
PMNS	sin²	0.307	4973107678895559	7.04e-17
PMNS	sin²	0.545	8828481058625667	2.83e-17
PMNS	sin²	0.0218	353139242345027	8.78e-16
PMNS	_CP/	1.083	17543568782553390	8.55e-18
PMNS	r_	0.0294795	477540463964327	7.90e-16
EW/QCD	_s(M_Z)	0.1179	1909867737269663	1.60e-16
EW/QCD	sin²_W^eff,	0.23153	3750565540373579	8.97e-17
EW/QCD	G_F·M_Z²	0.09698647	1571088459200101	8.31e-17
EW/QCD	M_W/M_Z	0.88153	142799466194684 12	1.14e-17
EW/QCD	_check	1.011223783	16380862419430803	7.56e-18
EW/QCD	_Z/M_Z	0.02736337	443260532193774	5.65e-16
EW/QCD	[GUT]	0.01694296	274459899034155	6.18e-16
EW/QCD		0.03380005	547528625152178	7.07e-16
EW/QCD		0.1179	1909867737269663	1.60e-16
EW/QCD	g [GUT]	0.46142342	7474620115207141	4.35e-17
EW/QCD	g	0.65172383	10557305530735293	4.35e-18
EW/QCD	g	1.21719969	19717476044673042	1.39e-17
EW/QCD	_QCD (null)	0	0	(exact)
EW/QCD	_QCD (upper)	2.5e-10 (p=10)	1426631354132577	(snap-down)
HIGGS/YUKAWA	M_H/M_Z	1.3735420	22250072802689228	7.55e-18
HIGGS/YUKAWA	(Higgs Quartic)	0.1293838	2095895082329058	1.76e-16
HIGGS/YUKAWA	m_e/M_Z	5.6038e-6	90776557602	4.64e-12

HIGGS/YUKAWA	m_/M_Z	0.0011587	18769712773164	5.14e-15
HIGGS/YUKAWA	m_/M_Z	0.0194858	315650813254981	2.96e-16
HIGGS/YUKAWA	y_e	2.0754e-6	33619154268	1.07e-11
HIGGS/YUKAWA	y_	4.2912e-4	6951374737775	1.73e-14
HIGGS/YUKAWA	y_	0.0072166	116901473972260	4.07e-15
HIGGS/YUKAWA	m_u/M_Z	2.4126e-5	390819642043	6.24e-13
HIGGS/YUKAWA	y_u	1.0626e-5	172126190091	1.42e-12
HIGGS/YUKAWA	m_d/M_Z	5.1542e-5	834932871638	1.92e-13
HIGGS/YUKAWA	y_d	2.2700e-5	367724133376	8.06e-13
HIGGS/YUKAWA	m_s/M_Z	0.0010528	17053948016432	2.71e-14
HIGGS/YUKAWA	y_s	0.0004637	7510961022142	3.92e-15
HIGGS/YUKAWA	m_c/M_Z	0.0139273	225609520634054	1.99e-15
HIGGS/YUKAWA	y_c	0.0061339	99363755188754	6.96e-16
HIGGS/YUKAWA	m_b/M_Z	0.0458396	742557319882163	6.24e-16
HIGGS/YUKAWA	y_b	0.0201888	327039761172434	6.04e-16
HIGGS/YUKAWA	m_t/M_Z	1.8945558	30690000617904919	1.21e-17
HIGGS/YUKAWA	y_t	0.8344071	13516600272763094	1.70e-17
HIGGS/YUKAWA	m_1/M_Z (p=10)	1.0966e-13	625800593121	3.96e-13
HIGGS/YUKAWA	m_2/M_Z (p=10)	1.4474e-13	825961959206	1.00e-13
HIGGS/YUKAWA	m_3/M_Z (p=10)	5.6100e-13	3201384454595	3.29e-14
HIGGS/YUKAWA	y_1 (p=10)	4.8299e-14	275617344326	9.12e-13
HIGGS/YUKAWA	y_2 (p=10)	6.3747e-14	363773131910	4.16e-14
HIGGS/YUKAWA	y_3 (p=10)	2.4708e-13	1409965236917	1.72e-13

DNA Fingerprint Table (`Output Data (DNA) EZ Read.txt`)

Columns: Sector | Symbol | Residue (mod 23, 49, 50, 137)

Sector	Symbol	Residue (mod 23, 49, 50, 137)
CORE	^{1} (CODATA)	(3, 42, 47, 5)
CORE	^{1}(MZ,eff)	(0, 37, 8, 103)
CORE	sin^{2}_W(MZ,MS)	(18, 32, 42, 65)
CORE	/e mass	(15, 35, 4, 63)
CORE	/ mass	(8, 34, 41, 92)
CORE	p/e mass	(21, 38, 18, 60)
CORE	a_e (leptonic)	(12, 42, 19, 25)
CORE	a_ (exp)	(10, 9, 18, 7)
CORE	(models)	(17, 44, 26, 105)
CORE	c (models)	(17, 41, 4, 79)
MASS RATIOS	/e	(10, 8, 25, 48)
MASS RATIOS	/p	(5, 41, 40, 43)
MASS RATIOS	/p	(21, 15, 3, 73)
MASS RATIOS	e/p	(9, 27, 42, 108)
MASS RATIOS	e/	(15, 4, 23, 8)
MASS RATIOS	e/	(0, 20, 37, 9)
MASS RATIOS	p/	(12, 22, 22, 57)
MASS RATIOS	p/	(1, 12, 47, 106)
CKM	|V_ud|	(21, 47, 4, 134)
CKM	|V_us|	(21, 27, 1, 61)
CKM	|V_ub|	(20, 31, 18, 18)
CKM	|V_cd|	(13, 14, 42, 95)
CKM	|V_cs|	(22, 38, 21, 11)
CKM	|V_cb|	(15, 35, 37, 131)
CKM	|V_td|	(17, 13, 2, 82)
CKM	|V_ts|	(1, 39, 13, 111)
CKM	|V_tb|	(6, 7, 9, 119)
CKM	J_CKM	(21, 47, 47, 68)
CKM		(21, 27, 1, 61)
CKM	A	(4, 34, 33, 123)
CKM		(6, 29, 35, 43)
CKM		(11, 26, 49, 95)

PMNS	sin²	(2, 7, 9, 75)
PMNS	sin²	(1, 12, 17, 34)
PMNS	sin²	(16, 40, 27, 51)
PMNS	_CP/	(22, 17, 40, 130)
PMNS	r_	(5, 1, 27, 118)
EW/QCD	_s(M_Z)	(15, 3, 13, 101)
EW/QCD	sin²_W^eff,	(7, 4, 29, 77)
EW/QCD	G_F·M_Z²	(6, 44, 1, 70)
EW/QCD	M_W/M_Z	(13, 29, 12, 9)
EW/QCD	_check	(16, 14, 3, 9)
EW/QCD	_Z/M_Z	(5, 1, 24, 114)
EW/QCD	[GUT]	(12, 23, 5, 83)
EW/QCD		(18, 12, 28, 18)
EW/QCD		(15, 3, 13, 101)
EW/QCD	g [GUT]	(16, 29, 41, 101)
EW/QCD	g	(17, 8, 43, 61)
EW/QCD	g	(11, 41, 42, 58)
EW/QCD	_QCD (null)	(0, 0, 0, 0)
EW/QCD	_QCD (upper)	(6, 19, 27, 133)
HIGGS/YUKAWA	M_H/M_Z	(8, 7, 28, 42)
HIGGS/YUKAWA	(Higgs Quartic)	(15, 31, 8, 9)
HIGGS/YUKAWA	m_e/M_Z	(6, 10, 2, 32)
HIGGS/YUKAWA	m_/M_Z	(10, 31, 14, 113)
HIGGS/YUKAWA	m_/M_Z	(11, 15, 31, 122)
HIGGS/YUKAWA	y_e	(11, 7, 18, 86)
HIGGS/YUKAWA	y_	(2, 41, 25, 82)
HIGGS/YUKAWA	y_	(14, 40, 10, 62)
HIGGS/YUKAWA	m_u/M_Z	(16, 5, 43, 14)
HIGGS/YUKAWA	y_u	(6, 30, 41, 15)
HIGGS/YUKAWA	m_d/M_Z	(15, 47, 38, 124)
HIGGS/YUKAWA	y_d	(22, 26, 26, 119)
HIGGS/YUKAWA	m_s/M_Z	(10, 19, 32, 98)
HIGGS/YUKAWA	y_s	(19, 11, 42, 46)
HIGGS/YUKAWA	m_c/M_Z	(22, 11, 4, 52)
HIGGS/YUKAWA	y_c	(6, 0, 4, 61)
HIGGS/YUKAWA	m_b/M_Z	(20, 16, 13, 74)
HIGGS/YUKAWA	y_b	(9, 37, 34, 86)
HIGGS/YUKAWA	m_t/M_Z	(18, 18, 19, 119)
HIGGS/YUKAWA	y_t	(4, 24, 44, 86)
HIGGS/YUKAWA	m_1/M_Z	(1, 46, 21, 4)
HIGGS/YUKAWA	m_2/M_Z	(16, 20, 6, 36)
HIGGS/YUKAWA	m_3/M_Z	(15, 19, 45, 78)
HIGGS/YUKAWA	y_1	(18, 37, 26, 5)
HIGGS/YUKAWA	y_2	(12, 27, 10, 15)
HIGGS/YUKAWA	y_3	(16, 20, 17, 108)

Why This Format Is Useful

Enables **exact arithmetic** with physical constants using only integers

Reveals **number-theoretic structure** in the Standard Model parameters

Simplifies **reproduction, validation, and extension** of the dataset in code

Facilitates pattern searches via **modular residue comparisons**
To reconstruct any constant: multiply its k by U.
To explore relationships: compare residue tuples across sectors.