



Joseph Wright of Derby, *A Philosopher Giving that Lecture on an Orrery, 1766*, Derby Museum and Art Gallery

dark decade

renaissance age

baroque age

Current algebra,
Regge poles, bootstrap,
Veneziano model

Yang&Mills

SSB
eightfold way
V-A

model of leptons
color
naive quarks

asymptotic freedom
renormalization
GIM
quantum anomalies

1972

Standard Model
established

RGE

pQCD, DGLAP,
lattice

GUT,
SUSY,
technicolor

strings
supergravity

neutrinos, big bang cosmology, inflation

2D models, matrix models/M theory
branes, CFT/AdS

SUSY, again
extra DIMs
composite Higgs

portals: ALPs, dark photon

SMEFT

DM models

GR, BHs

quantum information
and technology

↑
strangeness (1953)

↑
parity violation (1957)

↑
CP violation (1964)

↑
solar neutrinos (1967)

↑
parton scaling (1968)

↑
pulsar (1967)
dark matter (1968)

↑
 J/ψ (1974)

↑
neutral currents (1973)

↑
tau (1975)

↑
b (1977)

↑
W Z (1984)

↑
WMAP(1992)

↑
t (1995)

↑
3 jets (1996)

↑
neutrino oscillations (1998)

↑
K and B physics, CKM

↑
direct CP violation (1999)

↑
Planck (2009)

↑
Higgs boson (2012)

↑
GW (2015)

← Brookhaven (1960-1980)

← SLAC (1966-2008)

← SppS (1981-1991)

← Tevatron (1983-2011)

← LEP (1989-2000)

← Hera (1992-2007)

← LHC (2008-)

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Current algebra, Regge poles, bootstrap, Veneziano model ✓

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Standard Model established

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GUT, SUSY, technicolor ✓

strings supergravity ✓

2D models, matrix models/M theory branes, CFT/AdS ✓

SUSY, again extra DIMs composite Higgs ✓

portals: ALPs, dark photon ✓

SMEFT ✓ DM models ✓

GR, BHs ✓

quantum information and technology ✓

↑ strangeness (1953) ↑ parity violation (1957) ↑ CP violation (1964)

↑ solar neutrinos (1967) ↑ parton scaling (1968) ↑ pulsar (1967) ↑ dark matter (1968)

↑ J/ψ (1974) ↑ neutral currents (1973) ↑ tau (1975) ↑ b (1977) ↑ W Z (1984) ↑ WMAP(1992) ↑ t (1995) ↑ 3 jets (1996) ↑ neutrino oscillations (1998) ↑ direct CP violation (1999) ↑ K and B physics, CKM ↑ Planck (2009) ↑ Higgs boson (2012) ↑ GW (2015)

Brookhaven (1960-1980)

SLAC (1966-2008)

SppS (1981-1991)

Tevatron (1983-2011)

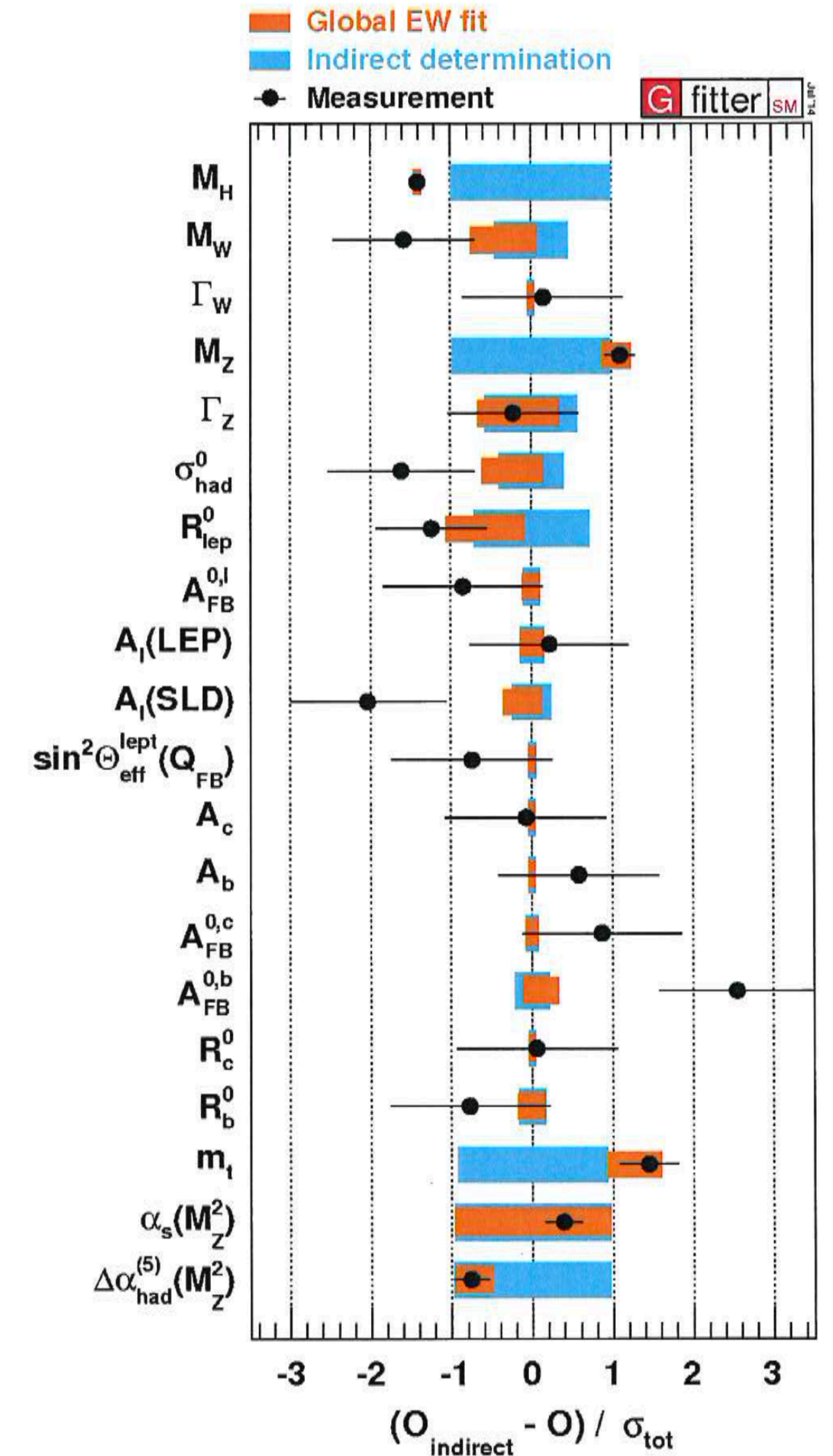
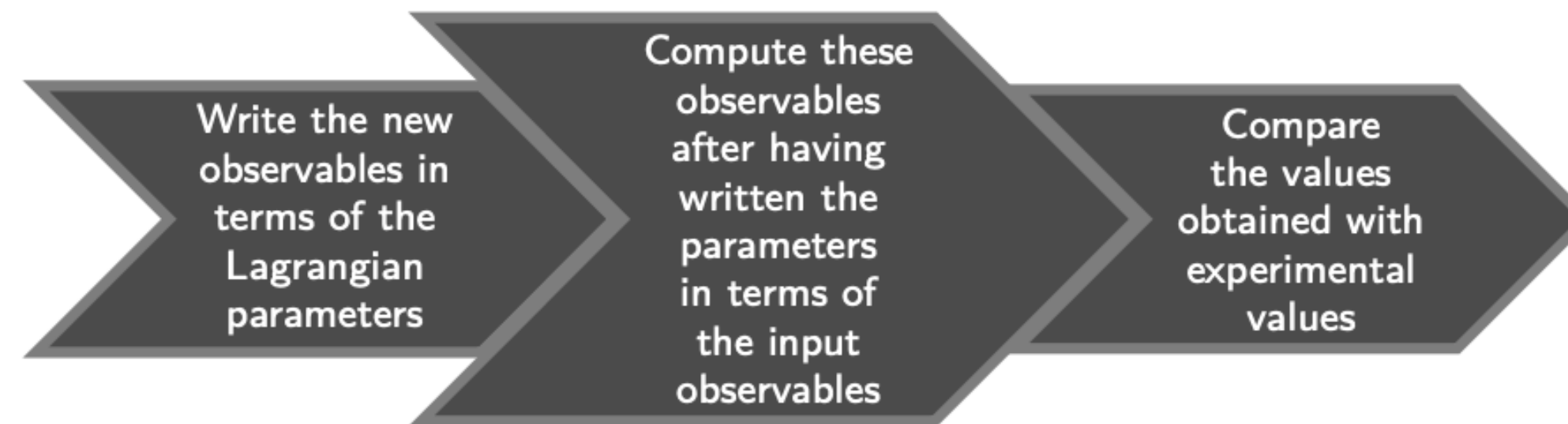
LEP (1989-2000)

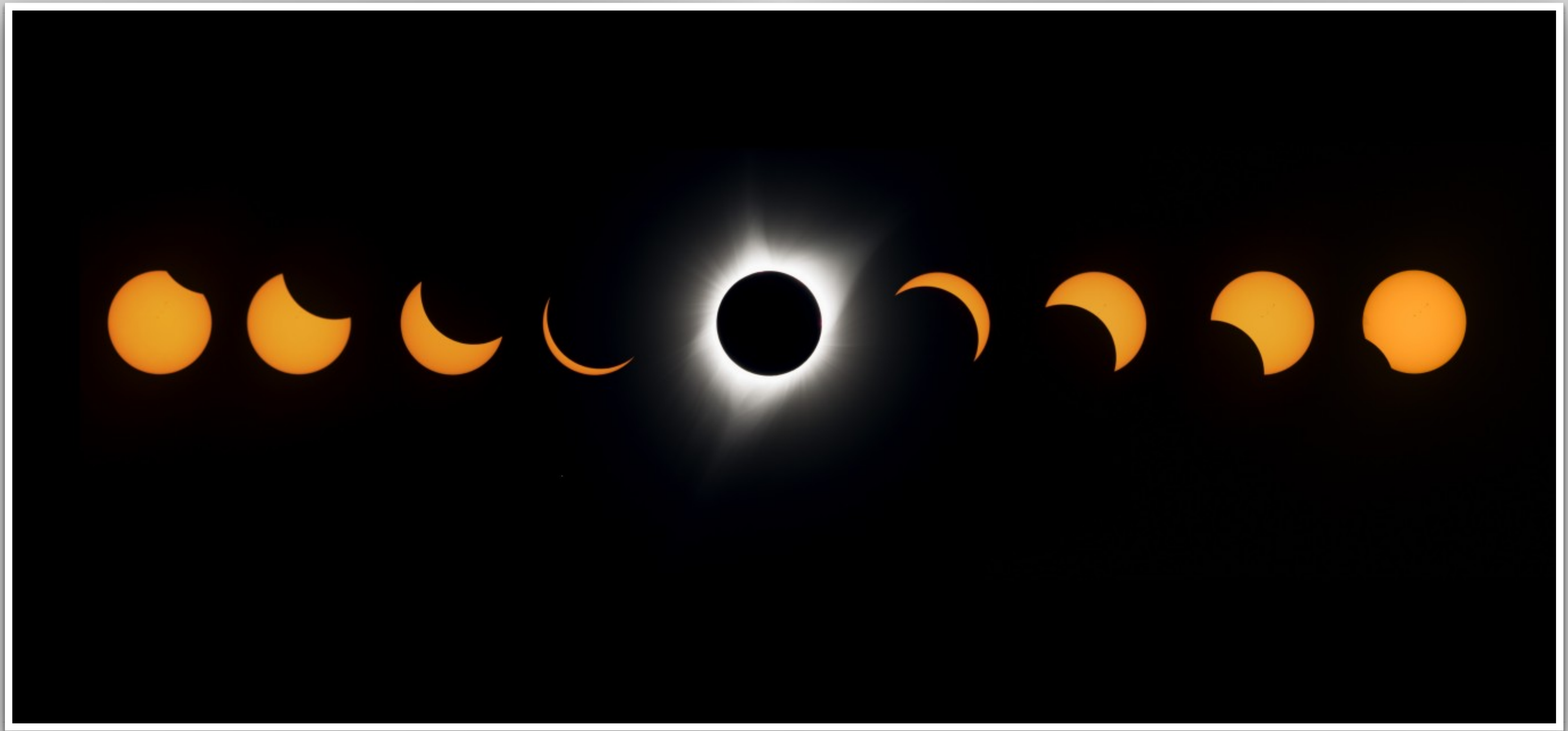
Hera (1992-2007)

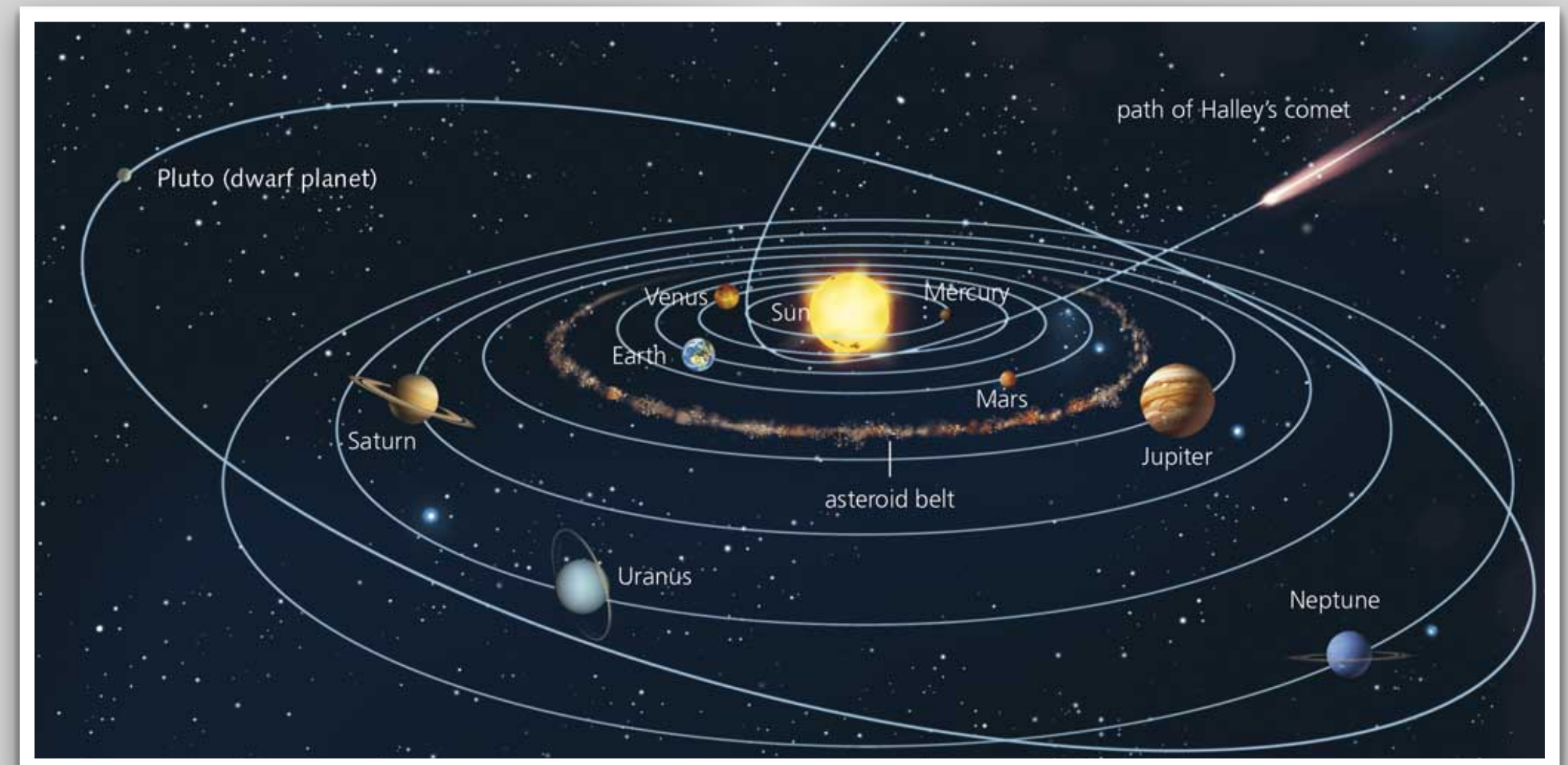
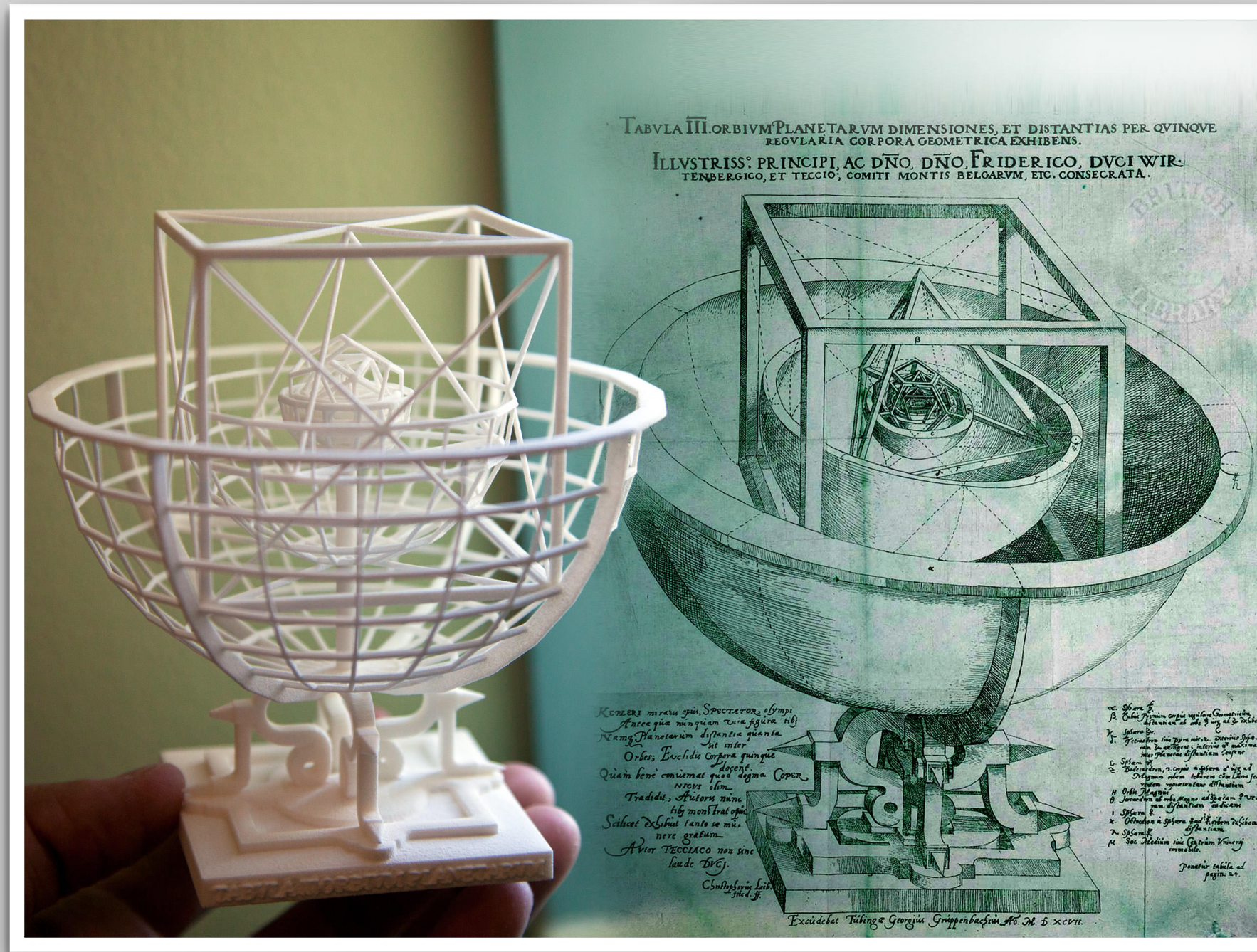
LHC (2008-)

the SM: the theory of something

12	Fermion masses	$m_u, m_d, m_c, m_s, m_t, m_b$ $m_e, m_\mu, m_\tau, m_1, m_2, m_3$
4 + 4	Flavor mixing matrices	V_{CKM} V_{PMNS}
3	Gauge couplings	g_s, g, g'
2	Parameters in the Higgs potential	μ, λ
1	θ term in QCD	$\bar{\theta}$







many happy returns!