

Constant	Value	
(Note: even though it's not "fundamental" as defined in the article, the Planck mass $m_P = 1.22089(6) \times 10^{19} \text{ GeV}/c^2$ is important for the mass ratios below.		
m_u/m_P	$(1.7 - 3.3 \text{ MeV}/c^2) / m_P =$	$1.4 \times 10^{-22} - 2.7 \times 10^{-22}$
m_d/m_P	$(4.1 - 5.8 \text{ MeV}/c^2) / m_P =$	$3.4 \times 10^{-22} - 4.8 \times 10^{-22}$
m_c/m_P	$(1.27 \text{ GeV}/c^2) / m_P =$	1.04×10^{-19}
m_s/m_P	$(101 \text{ MeV}/c^2) / m_P =$	8.27×10^{-21}
m_t/m_P	$(172.0 \text{ GeV}/c^2) / m_P =$	1.41×10^{-17}
m_b/m_P^\dagger	$(4.19 \text{ GeV}/c^2) / m_P =$	3.43×10^{-19}
Parameters in the Cabibbo–Kobayashi–Maskawa matrix [‡]		
λ	0.2253	
A	0.808	
$\bar{\rho}$	0.132	
$\bar{\eta}$	0.341	
Parameters for another way [§] that one looks at the CKM matrix		
$\theta_{13,CKM}$	$\sin^{-1}(e^{i(0.995)} A \lambda^3(\rho - i\eta)) = .00338$	
$\theta_{12,CKM}$	$\sin^{-1}(0.2253) = 0.229$	
$\theta_{23,CKM}$	$\sin^{-1}(0.808 \cdot 0.2253^2) = 0.041$	
δ_{CKM}	0.995	
m_e/m_P	$(.510999 \text{ MeV}/c^2) / m_P =$	4.18546×10^{-23}
m_{ν_e}/m_P	Unknown	
m_μ/m_P	$(105.658 \text{ MeV}/c^2) / m_P =$	8.65418×10^{-21}
m_{ν_μ}/m_P	Unknown	
m_τ/m_P	$(1776.82 \text{ MeV}/c^2) / m_P =$	1.45535×10^{-19}
m_{ν_τ}/m_P	Unknown	
Parameters in the Pontecorvo-Maki-Nakagawa-Sakata matrix ^{††}		
$\theta_{13,PMNS}$	$< \sin^{-1} \sqrt{0.056} = 0.239$	
$\theta_{12,PMNS}$	$\sin^{-1} \sqrt{0.304} = 0.584$	
$\theta_{23,PMNS}$	$\frac{1}{2} \sin^{-1} \sqrt{1} = \pi/4$ (with some uncertainty)	

δ_{PMNS}	Unknown
m_{H}	Unknown
vev_{H}	Unknown
Gauge coupling constants (g_{group}) are given at an energy of $m_{\text{Z}} \cdot c^2 = 91.1876 \text{ GeV}$, i.e. $g_{\text{group}} = g_{\text{group}}(m_{\text{Z}} \cdot c^2)$	
$g_{\text{U}(1)} = g'$	0.357
$g_{\text{SU}(2)} = g$	0.652
A relation can be seen between the fine structure constant α and the two previous gauge coupling constants:	
$\alpha(m_{\text{Z}}) = \frac{1}{4\pi} \frac{(g \cdot g')^2}{g^2 + g'^2} = .00780 = 1/128, \text{ which is not our familiar } 1/137, \text{ but actually does agree}$	
with experiment[1] because of the higher energy.	
$g_{\text{SU}(3)} = g_{\text{s}}$	1.221
The strong force coupling can also be formulated with	
$\alpha_{\text{s}}(m_{\text{Z}}) = \frac{g_{\text{s}}^2}{4\pi} = 0.1184$	
$\Omega_{\Lambda} (= \frac{\Lambda c^2}{3H_0^2})^{\dagger\dagger}$	0.74

† Mass value from the modified minimal subtraction scheme

‡ Wolfenstein parameterization, where the CKM matrix is given by:

$$\begin{bmatrix} 1 - \lambda^2 & \lambda & A\lambda^3(\rho - i\eta) \\ -\lambda & 1 - \lambda^2 & A\lambda^2 \\ A\lambda^3(1 - \rho - i\eta) & -A\lambda^2 & 1 \end{bmatrix}$$

§ Using the relations: $\lambda = s_{12}$; $A\lambda^2 = s_{23}$; $A\lambda^3(\rho - i\eta) = s_{13}e^{-i\delta}$, where $c_{ij} = \cos \theta_{ij}$, $s_{ij} = \sin \theta_{ij}$, we can also write the CKM matrix as:

$$\begin{bmatrix} c_{12}c_{13} & s_{12}c_{13} & s_{13}e^{-i\delta} \\ -s_{12}c_{23} - c_{12}s_{23}s_{13}e^{i\delta} & c_{12}c_{23} - s_{12}s_{23}s_{13}e^{i\delta} & s_{13}c_{13} \\ s_{12}s_{23} - c_{12}c_{23}s_{13}e^{i\delta} & -c_{12}s_{23} - s_{12}c_{23}s_{13}e^{i\delta} & c_{23}c_{13} \end{bmatrix}$$

†† Pontecorvo-Maki-Nakagawa-Sakata matrix defined the same as the CKM matrix

‡‡ H_0 is the Hubble constant.

The values of the constants are taken from PDG, except the g-values (coupling constants) which came from the Wikipedia page on the standard model. I also used Wikipedia for the CKM matrix and the PMNS matrix (Neutrino oscillations). Other sources I found useful (essential) are given below.

$$e^2 = \frac{(g \cdot g')^2}{g^2 + g'^2} \text{ in Lorentz-Heaviside "natural" units}$$

from <http://www.physicsforums.com/showthread.php?t=365156>

$e = \sqrt{4\pi\alpha}$ (Lorentz Heaviside)
from the Wikipedia page on natural units

[1] F. Jegerlehner, hep-ph/0105283 (2001)

List of 26 constants taken from John Baez <http://math.ucr.edu/home/baez/constants.html>
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