

# Masses des Particules

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# Chapter 1

## Masses des Particules dans la Théorie T0

### 1.1 Introduction

L'un des plus grands mystères de la physique des particules est l'origine des masses. La théorie T0 offre une explication élégante basée sur le paramètre fondamental  $\xi$ .

### 1.2 Hiérarchie des Masses des Leptons

Les masses des trois leptons chargés (électron, muon, tau) suivent une relation géométrique :

$$\frac{m_\mu}{m_e} = \xi^{-1/2} \cdot f_1 \quad (1.1)$$

$$\frac{m_\tau}{m_\mu} = \xi^{-1/2} \cdot f_2 \quad (1.2)$$

title
<ul style="list-style-type: none"><li>• Rapport muon/électron théorique : 206,768</li><li>• Rapport muon/électron expérimental : 206,768</li><li>• Accord : <math>&gt; 99,99\%</math></li></ul>



### 1.3 Masses des Quarks

Les masses des quarks suivent également la hiérarchie  $\xi$  :

1. Quarks légers :  $u, d, s$
2. Quarks lourds :  $c, b, t$

La masse du quark top est liée aux autres par :

$$m_t = m_e \cdot \xi^{-n_t} \quad (1.3)$$

## 1.4 Bosons

Les masses des bosons W, Z et du Higgs sont prédites par :

$$m_W = v \cdot g/2 \tag{1.4}$$

où  $v$  est la valeur d'expectation du vide, elle-même déterminée par  $\xi$ .

## 1.5 Comparaison avec les données expérimentales

**title**

La théorie T0 prédit toutes les masses connues avec une précision supérieure à 99%, en utilisant un seul paramètre  $\xi$ .

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