

Determination of the target asymmetry T in η' photoproduction

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DRAFT

I hereby declare that this thesis was formulated by myself and that no sources or tools other than those cited were used.

Bonn,
Date

.....
Signature

- 1. Gutachter: JUN. PROF. DR. ANNIKA THIEL
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Introduction

1.1 The Standard Model of Particle Physics

The *Standard Model of Particle Physics* (SM) is believed to describe the fundamental particles and forces of the universe. It distinguishes between *fermions* and *bosons*. While matter consists of fermions, bosons are particles that mediate the fundamental interactions.

Fermions themselves are again grouped into (anti-)quarks and (anti-)leptons. There are three generations of quarks and leptons. Of these only the first and lightest consists of stable particles, i.e. the up and down quark as well as the electron and its neutrino. All other particles are heavier and not stable, they will thus decay fast.

Four interactions are part of the SM: strong, electromagnetic, weak and gravitational interaction¹. In particle physics gravitation can be neglected. Strong, electromagnetic and weak interaction are transmitted by gluons g , photons γ and W/Z -bosons respectively. Strong and weak interaction are restricted to a finite range of the order of the nucleon radius, whereas electromagnetic interaction and gravitation have infinite range.

The masses of fermions and bosons are generated through the HIGGS-mechanism. The mediator boson of this interaction is called the HIGGS boson.

A summary of the SM can be found in figure 1.1.

1.2 Photoproduction of Pseudoscalar Mesons

$$\int_0^\infty \frac{\sin \alpha \beta x}{\gamma x}$$

1.3 Polarization Obervables and the Complete Experiment

bla

¹ they are ordered here according to their relative strength

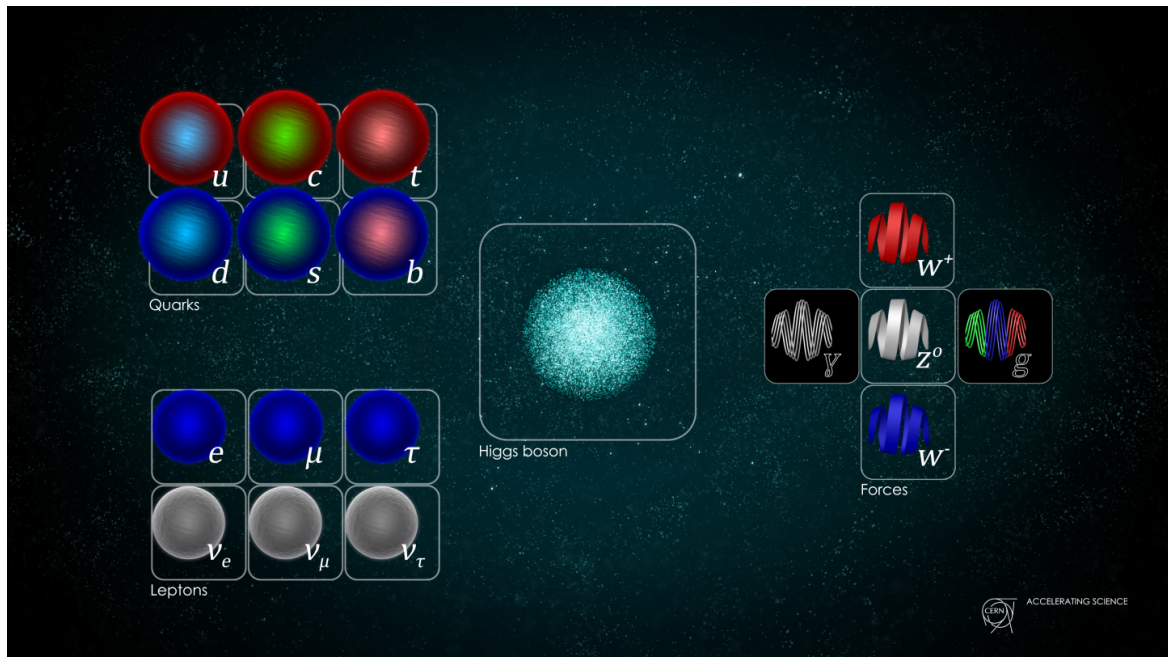


Figure 1.1: Standard Model of Particle Physics, taken from [Dom]

1.4 Motivation and Structure of this Thesis

bla

Experimental Setup

Here comes the very good text.

2.1 Overview of the CBELSA/TAPS experiment

2.2 Production of (polarized) high energy photon beam

2.3 Beam Target

2.4 Calorimeters

2.5 Trigger

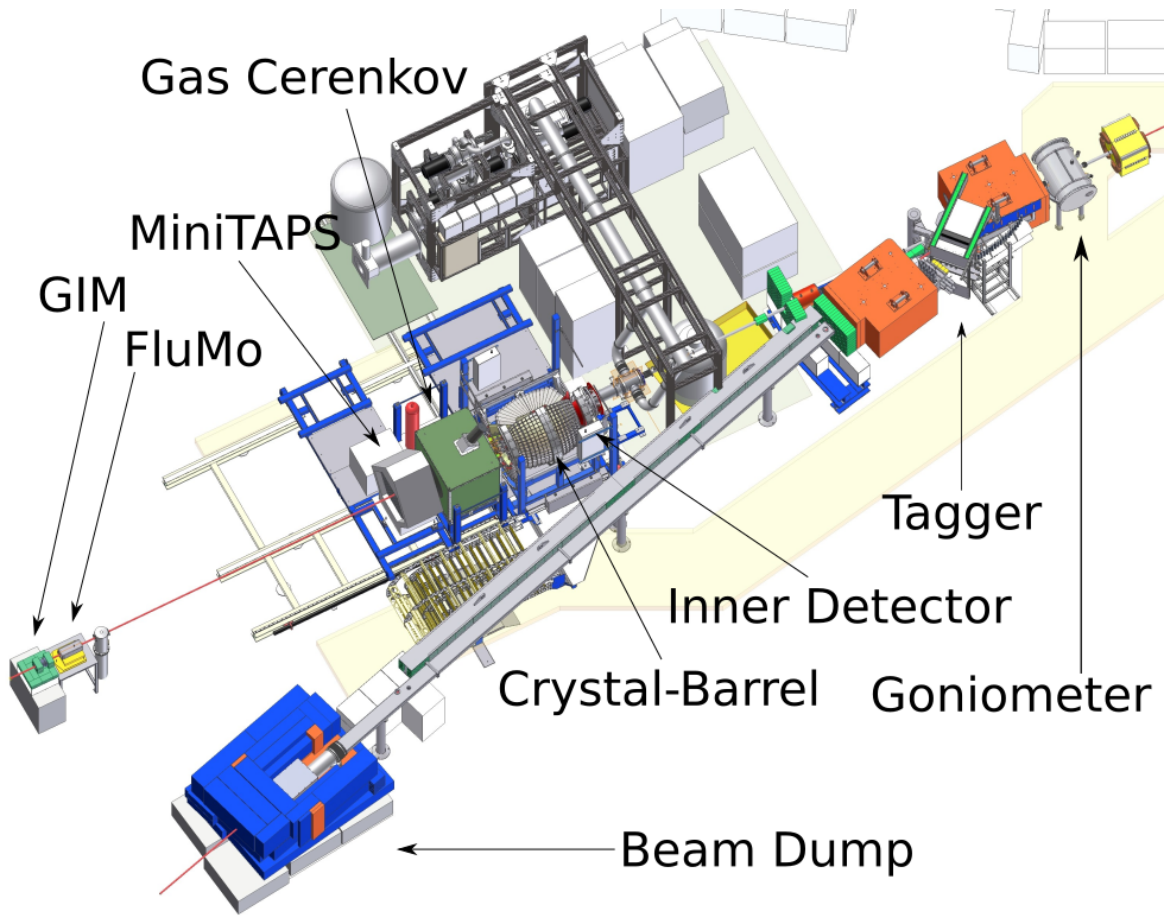


Figure 2.1: Overview of the CBELSA/TAPS experiment [Wal]

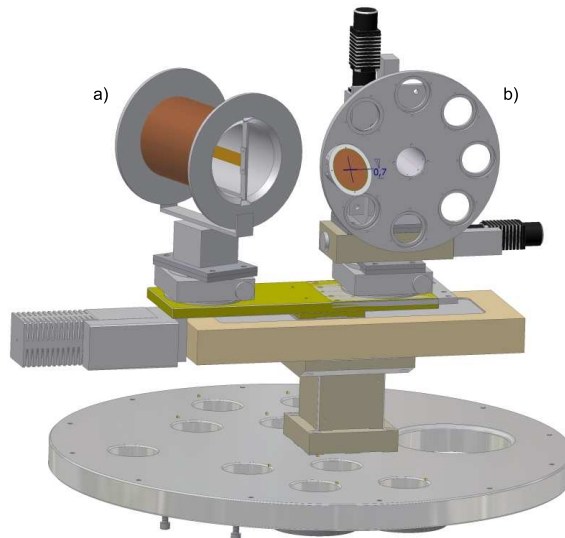


Figure 2.2: [Wal]

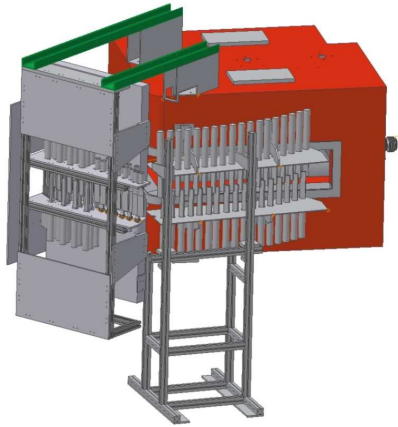


Figure 2.3: [Wal]



Figure 2.4: [Wal]

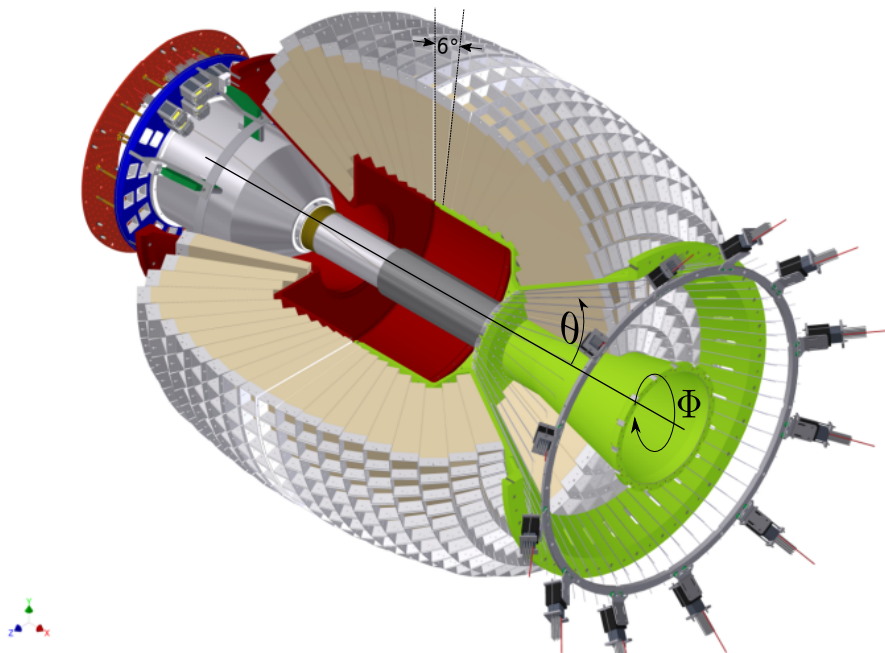


Figure 2.5: D. WALTHER in [Urb17]



Figure 2.6: [Wal]

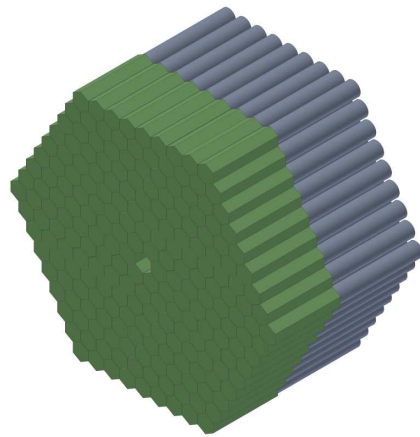


Figure 2.7: [Wal]

Useful information

In the appendix you usually include extra information that should be documented in your thesis, but not interrupt the flow.

The L^AT_EX WikiBook [[latexwiki](#)] is a useful source of information on L^AT_EX.

Bibliography

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