

# Properties of Elementary Particles

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# 1 Introduction

# 2 Theoretical Background

## 2.1 Basics of particle physics

### 2.1.1 title

## 2.2 Bubble Chamber

## 2.3 Proton Proton interaction

## 2.4 $\omega$ Meson

# 3 Experimental Set-Up and Measurements

# 4 Analysis

# 5 Conclusion

# 6 Appendix

## References

- [1] Peter W. Milonni (Los Alamos National Laboratory) and Joseph H. Eberly (University of Rochester), *Lasers* (Wiley-Interscience, 1988)
- [2] Simon Hooker and Colin Webb, Department of Physics, University of Oxford, *Laser Physics*, (Oxford University Press, 2011)
- [3] Massachusetts Institute of Technology (MIT), Electrical Engineering and Computer Science, Compound Semiconductor Devices, 2003 <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-772-compound-semiconductor-devices-spring-2003/lecture-notes/lecture20.pdf>
- [4] Bergmann and Schäfer, *Lehrbuch der Experimentalphysik, Band 3, Optik und Wellenmechanik*, de Gruyter Verlag, 10th. edition (2004)
- [5] R. W. Boyd, *Nonlinear Optics*, Academic Press Boston (1992)
- [6] D. Meschede, *Optik, Licht und Laser*, Vieweg+Teubner Verlag, 3.rd edition (2008)
- [7] E. Hecht, *Optics*, Addison Wesley, 4.th edition (2002)
- [8] D. Kühlke, *Optik - Grundlagen und Anwendungen*, Verlag Harri Deutsch, 3.rd improved edition (2011)
- [9] [https://en.wikipedia.org/wiki/Gaussian\\_beam#/media/File:GaussianBeamWaist.svg](https://en.wikipedia.org/wiki/Gaussian_beam#/media/File:GaussianBeamWaist.svg)
- [10] Experimental Description, *A245: Optical Frequency Doubling*, University of Bonn, August 2015
- [11] W. Zinth and U. Zinth, *Optik Lichtstrahlen-Wellen-Photonen*, Oldenbourg Verlag München, 4th. improved edition (2013)