

# The Quantum Mechanical Two-body Problem

These are lecture notes by Apoorv Potnis of the lecture ‘Quantenmechanisches Zweikörperproblem’ or ‘The Quantum Mechanical Two-body Problem’, given by **Prof. Frederic Paul Schuller**, as the seventeenth lecture in the course ‘Theoretische Physik 2: Theoretische Quantenmechanik’ in 2014/15 at the Friedrich-Alexander-Universität Erlangen-Nürnberg. While the original lecture is in German, these notes are in English and have been prepared using YouTube’s automatic subtitle translation tool. The lecture is available at [https://www.youtube.com/watch?v=mcM4S3IMMvI&list=PLP05pgr\\_frzTeqa\\_thb1tYjyw8F9ehw7v&index=17](https://www.youtube.com/watch?v=mcM4S3IMMvI&list=PLP05pgr_frzTeqa_thb1tYjyw8F9ehw7v&index=17) and at <https://www.fau.tv/clip/id/44891>.

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## 1 Introduction

## References

- [1] Frederic Schuller, Simon Rea, and Richie Dadhley. ‘Lectures on Quantum Theory’. Lecturer: Prof. Frederic Paul Schuller. 2019. URL: [https://docs.wixstatic.com/ugd/6b203f\\_a94140db21404ae69fd8b367d9fcd360.pdf](https://docs.wixstatic.com/ugd/6b203f_a94140db21404ae69fd8b367d9fcd360.pdf).
- [2] Frederic Schuller. *Lectures on Quantum Theory*. 2015. URL: [https://youtube.com/playlist?list=PLPH7f\\_7Z1zxQVx5jRjbfRGEzWY\\_upS5K6](https://youtube.com/playlist?list=PLPH7f_7Z1zxQVx5jRjbfRGEzWY_upS5K6).
- [3] Philip Bowers. *Lectures on Quantum Mechanics*. Cambridge University Press, Cambridge, 2020. ISBN: 978-1-108-42976-4.

- [4] Michael Reed and Barry Simon. *Methods of Modern Mathematical Analysis I: Functional Analysis*. Revised and Enlarged edition. Vol. 1. Academic Press, Inc. London, 1980. ISBN: 978-0-080-57048-8.

The source code, updates and corrections to this document can be found on this GitHub repository: [https://github.com/apoorvpotnis/schuller\\_two-body\\_problem](https://github.com/apoorvpotnis/schuller_two-body_problem). The source code, along with the .bib file is embedded in this PDF. Comments and corrections can be mailed at [apoorvpotnis@gmail.com](mailto:apoorvpotnis@gmail.com).