

Oral Exam Quantum Technology

Exemplary Topics / General Questions as Guideline

1. Liouville Theorem
2. Interaction of particles and matter
3. simulation of ions in matter
4. ion implantation
5. basic setup of an implantation setup
6. How does RBS work?
7. How does an RBS spectrum look like? (qualitatively)
8. How does channeling work?
9. Whats NRA?
10. How does a cyclotron accelerator work?
11. What is the cyclotron frequency?
12. What role do relativistic effects play?
13. How do you extract the ions from a cyclotron?
14. What is a tandem accelerator?
15. What types of ion sources are there (explain principle)?
16. How does an electrostatic accelerator work?
17. Warum typischerweise kompliziert Ionenquelle zu steuern?
18. What is a synchrotron?
19. How does a linear (AC) accelerator work?
20. What is scattering?
21. Explain cross section and differential cross section!
22. Rutherford scattering
23. How does a mass spectrometer work?
24. Magnets as momentum filters
25. How does a semiconductor detector work?
26. What is PET?