

Advanced quantum mechanics and quantum field theory, FS 2021

Blatt 7

Submission: 29.04.2021, 12:00H, on adam in the appropriate folder.

One file per submission please; the filename HAS TO contain your name, or the submission will not be corrected!

Tutor: Gaomin Tang, gaomin.tang@unibas.ch

(1) **Lancaster/Blundell problem 22.1** (5 Punkte)

(2) **Lancaster/Blundell problem 22.2** (2+3 Bonus-Punkte)

(3) **The Gaussian integral** (3 Punkte)

Read and understand Sec. 23.2 of Lancaster/Blundell

- (a) In Step 3, LB require \mathbf{A} to be an $N \times N$, real, symmetric matrix. Is this sufficient for the manipulations described in the following? Give your reasons, in particular looking at (23.27).
- (b) Describe in detail what happens in Example 23.5. Explain the meaning of $\det A(x, y)$ and of $A^{-1}(x, y)$ in Eq. (23.29).