Universität Tübingen, Fachbereich Mathematik
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Wintersemester 25/26

Groups and Representations

Homework Assignment 12 (due on 21 January 2026)

Problem 46

We show that the GL(N) irrep corresponding to the Young diagram $\Theta_\mathrm{a} =$  with N rows is given by the determinant:

- First recall that for vectors $|i_1, \ldots, i_N\rangle$ contributing to $e_\mathrm{a} g|\alpha\rangle$ all i_k are different.
- Write these vectors as $p|1, \ldots, N\rangle$ with a permutation p.
- Then calculate $e_\mathrm{a} g|1, \ldots, N\rangle$ for $g \in \mathrm{GL}(N)$.

Which irrep corresponds to Θ_a if we replace GL(N) by the subgroup SU(N) $\subset$ GL(N)?