Symmetries in Physics

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lectures Tuesdays 10:15 – 11:45 in D6-135
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exercises Mondays 14:15 – 15:45 —— " ——

- script & exercises → Ma-Phy group page → teaching

Literature:

group theory part: "Groups, representations & physics"
H. F. Jones 2. Ed Bristol 1998

FB17: QD80 + QD130 J77 (2) (Jabo 1. Ed)

otherwise specified in lecture

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- examples (S)U(N), (S)O(N), SO(2) ≃ U(1)
- Clebsch-Gordon series for U(1)
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- unitary matrix reps $D = \exp[i \sum_{a=1} \theta^a T^a]$
- SU(2), SO(2), SO(3) ≅ SU(2)/$\mathbb{Z}_2$ $R(\theta) = \exp[i \theta^a T_a]$
- irreps of SO(3), orth. of char.
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- scalar products in the Cartan basis, Cartan Weyl basis
- quantisation of the root vectors $\frac{2\,\alpha\cdot\beta}{\alpha^2} = n = 0, 1, 2, 3$
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