Applications of Group Theory

Lectures	Tue	10:00 - 11:30	PHY 9.1.09
	Thu	10:00 - 11:30	PHY 9.1.09
Exercises	Fri	10:00 - 11:30	PHY 5.0.21

Sheet 3

---

1. Trivial representations

Show that every symmetry operator for every group can be represented by the (1×1) unit matrix. Is it also true that every symmetry operator for every group can be represented by the (2×2) unit matrix? If so, does such a representation satisfy the Wonderful Orthogonality Theorem? Why?

2. Character table of the Group D_4

Using the properties of the characters introduced during the lecture, construct the character table for the group D_4. Assign to each irreducible representation the correct name according to the Mulliken notation. Finally, calculate which irreducible representations are contained in the one associated to the three dimensional vector space $\mathbb{R}^3$.

Frohes Schaffen!