

# Eine Woche, ein Beispiel

## 12.1 weights of type E

It feels incomplete to discuss only the type E case without addressing the other classical cases.

Hence, this document serves as a complement to [2024.12.01].

▽ There are some new phenomena outside type E (which are not essential).

1. The formula becomes

$$2 \frac{\langle \varpi_i, \alpha_j \rangle}{\langle \alpha_j, \alpha_j \rangle} = \delta_{ij} \quad \text{i.e.,} \quad \langle \varpi_i \frac{2}{\langle \alpha_i, \alpha_i \rangle}, \alpha_j \rangle = \delta_{ij}$$

when  $i \neq j$ ,  $\frac{2}{\langle \alpha_i, \alpha_i \rangle}$  won't impact,  
as  $\delta_{ij} = 0$

$$s_k v = v - 2 \frac{\langle \alpha_k, v \rangle}{\langle \alpha_k, \alpha_k \rangle} \alpha_k$$

2.  $A = (\langle \alpha_i, \alpha_j \rangle)_{i,j}$  is not Cartan matrix. It is  $(2 \frac{\langle \alpha_i, \alpha_j \rangle}{\langle \alpha_i, \alpha_i \rangle})_{i,j}$ .

3. The minuscule weight <sup>orbit</sup> may not generate the whole lattice  
in type B, D

4. The minuscule weight <sup>orbit</sup> may not be the wts nearest to the origin  
in type B, C, D