

Diagram illustrating the structure of the  $W_{24}$  Coxeter group, showing the root system and its associated Dynkin diagram. The diagram is a tree structure with nodes labeled by roots and edges labeled by simple roots. The root system is  $E_6 + A_3$ .

The root system consists of 24 roots, labeled as follows:

- Roots of  $E_6$ :  $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6$  (labeled 1, 2, 3, 4, 5, 6 respectively).
- Roots of  $A_3$ :  $\alpha_7, \alpha_8, \alpha_9, \alpha_{10}$  (labeled 7, 8, 9, 10 respectively).

The Dynkin diagram is a tree structure with 24 nodes. The nodes are labeled by the roots  $\alpha_i$ . The edges are labeled by the simple roots  $\alpha_i$ . The diagram is a tree structure with 24 nodes and 23 edges. The root of the tree is  $\alpha_1$ . The edges are labeled as follows:

- $\alpha_1 - \alpha_2$  (labeled 1)
- $\alpha_2 - \alpha_3$  (labeled 2)
- $\alpha_3 - \alpha_4$  (labeled 3)
- $\alpha_4 - \alpha_5$  (labeled 4)
- $\alpha_5 - \alpha_6$  (labeled 5)
- $\alpha_6 - \alpha_7$  (labeled 6)
- $\alpha_7 - \alpha_8$  (labeled 7)
- $\alpha_8 - \alpha_9$  (labeled 8)
- $\alpha_9 - \alpha_{10}$  (labeled 9)

The diagram shows the root system and its associated Dynkin diagram, illustrating the structure of the  $W_{24}$  Coxeter group.