

The diagram illustrates the classification of simple Lie algebras over the complex numbers, organized by rank and signature. The root systems are represented by Dynkin diagrams, which are graphs where nodes represent simple roots and edges represent their linear relations. Nodes are labeled with their corresponding simple roots.

The diagram is structured as follows:

- Top Row:** Root systems of rank 4 and signature (3,1).
 - $E_6(-3,-2,-4,-1)$: A chain of 4 nodes with a double bond between the 2nd and 3rd nodes.
 - $F_4(-5,-4,-1)$: A chain of 4 nodes with a double bond between the 2nd and 3rd nodes.
 - $G_2(-5,-4,-1)$: A chain of 2 nodes with a triple bond between them.
 - $H_4(-5,-4,-1)$: A chain of 4 nodes with a double bond between the 2nd and 3rd nodes.
- Second Row:** Root systems of rank 3 and signature (2,1).
 - $E_5(-4,-3,-2,-4,-1)$: A chain of 5 nodes with a double bond between the 2nd and 3rd nodes.
 - $F_5(-5,-4,-3,-2,-1)$: A chain of 5 nodes with a double bond between the 2nd and 3rd nodes.
 - $G_3(-5,-4,-3,-2,-1)$: A chain of 3 nodes with a triple bond between the 1st and 2nd nodes.
 - $H_5(-5,-4,-3,-2,-1)$: A chain of 5 nodes with a double bond between the 2nd and 3rd nodes.
- Third Row:** Root systems of rank 2 and signature (1,1).
 - $E_4(-3,-2,-4,-1)$: A chain of 4 nodes with a double bond between the 2nd and 3rd nodes.
 - $F_4(-5,-4,-3,-2,-1)$: A chain of 4 nodes with a double bond between the 2nd and 3rd nodes.
 - $G_2(-5,-4,-3,-2,-1)$: A chain of 2 nodes with a triple bond between them.
 - $H_4(-5,-4,-3,-2,-1)$: A chain of 4 nodes with a double bond between the 2nd and 3rd nodes.
- Fourth Row:** Root systems of rank 1 and signature (0,0).
 - $E_3(-3,-2,-4,-1)$: A chain of 3 nodes with a double bond between the 2nd and 3rd nodes.
 - $F_3(-4,-3,-2,-4,-1)$: A chain of 3 nodes with a double bond between the 2nd and 3rd nodes.
 - $G_1(-5,-4,-3,-2,-1)$: A single node.
 - $H_3(-5,-4,-3,-2,-1)$: A chain of 3 nodes with a double bond between the 2nd and 3rd nodes.

The diagram also includes several other root systems, such as E_7 , F_7 , G_4 , and H_6 , which are arranged in a similar hierarchical manner based on their rank and signature.