The Wigner-Seitz cell is a polyhedron obtained by connecting a lattice point $P$ to all other lattice points and drawing the planes perpendicular to these connecting lines and passing through their midpoints (Figure 1). The polyhedron enclosed by these planes is the Wigner-Seitz cell. This construction is called the Dirichlet construction. The cell thus obtained is a primitive cell and it is possible to fill up the whole space by translation of that cell.

The inside of the Wigner-Seitz cell has been called domain of influence by Delaunay (1933). It is also called Dirichlet domain or Voronoi domain. The domain of influence of lattice point $P$ thus consists of all points $Q$ in space that are closer to this lattice point than to any other lattice point or at most equidistant to it (such that $OP \leq |t - OP|$ for any vector $t \in L$).

See also

1. Section 9.1 of *International Tables of Crystallography, Volume A*
2. Section 1.5 of *International Tables of Crystallography, Volume B*
3. Sections 1.2 and 2.2 of *International Tables of Crystallography, Volume D*

**Contributors**

- [Online Dictionary of Crystallography](#)