Lattice: infinite array of points in identical environment (1)
Metallic radius of Pt: in the ccp structure, the atoms are in contact along the face diagonal, therefore $r = \frac{a}{2\sqrt{2}} = 1.837$Å.

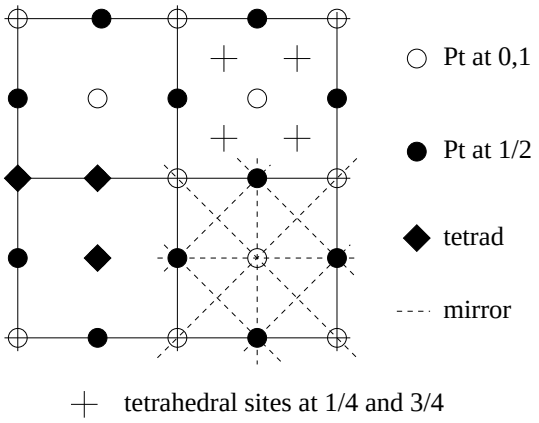

Figure 1: The Pt structure with mirrors and tetrads parallel to [001]. Tetrahedral sites are shown.

The tetrahedral sites are at $(\frac{1}{4},\frac{1}{4},\frac{1}{4})$, $(\frac{1}{4},\frac{1}{4},\frac{3}{4})$, $(\frac{1}{4},\frac{3}{4},\frac{1}{4})$, $(\frac{1}{4},\frac{1}{4},\frac{3}{4})$, $(\frac{3}{4},\frac{1}{4},\frac{1}{4})$, $(\frac{3}{4},\frac{1}{4},\frac{3}{4})$, $(\frac{3}{4},\frac{3}{4},\frac{1}{4})$, $(\frac{3}{4},\frac{3}{4},\frac{3}{4})$
In the PtS structure, all the intersections of mirrors are diads. Note that the structure has no tetra although the lattice has.

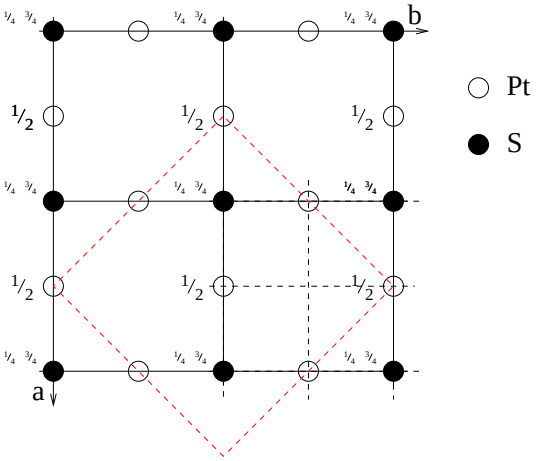

Figure 2: The PtS structure with mirrors parallel to [001]. In red the equivalent distorted ccp structure.

Pt atoms: [4] (distorted squares of S)
S atoms: [4] (distorted tetrahedrons of Pt)
The distance PtS is $\frac{1}{2}\sqrt{(a^2+\frac{c^4}{4})} = 2.31$Å, hence covalent.