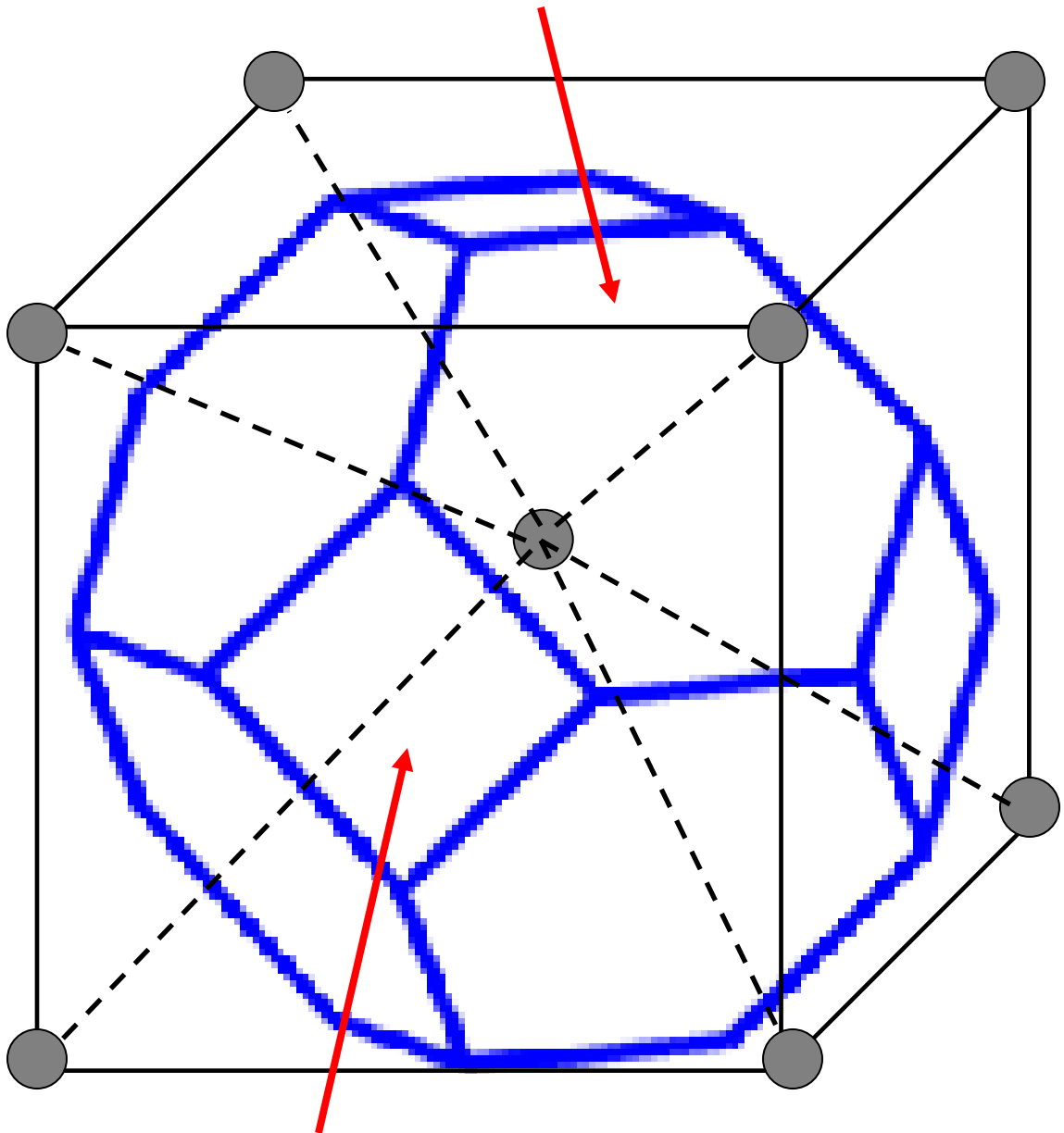


# Wigner-Seitz Cell for bcc Lattice ("truncated octahedron")

(reference atom is atom in center of conventional unit cube)

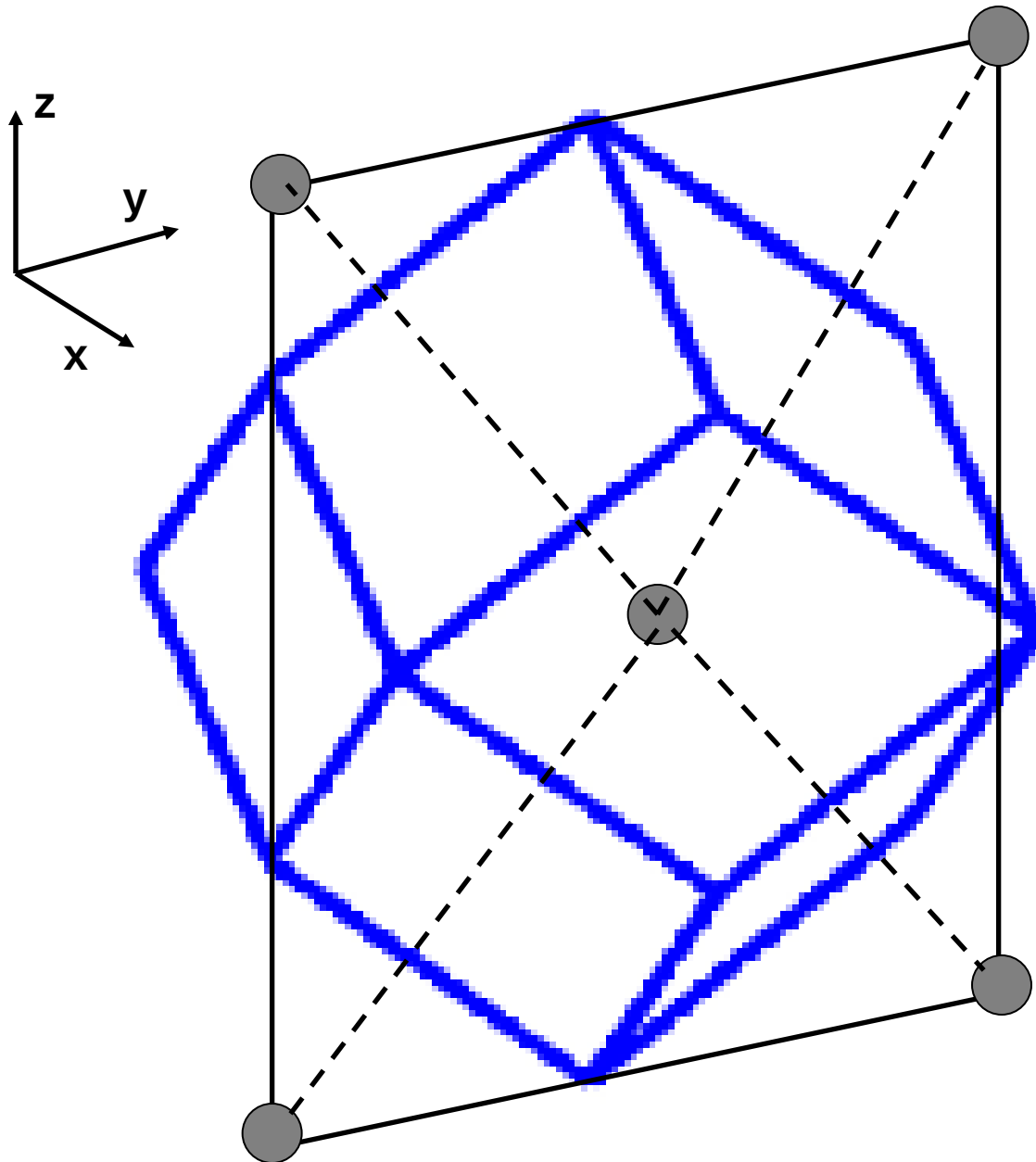
Note: eight hexagons come from bisecting planes  
to eight *nearest neighbor atoms*



Note: six squares in facets of conventional unit cell come  
from bisecting planes to *next nearest neighbors*

# Wigner-Seitz Cell for fcc Lattice ("rhombic dodecahedron")

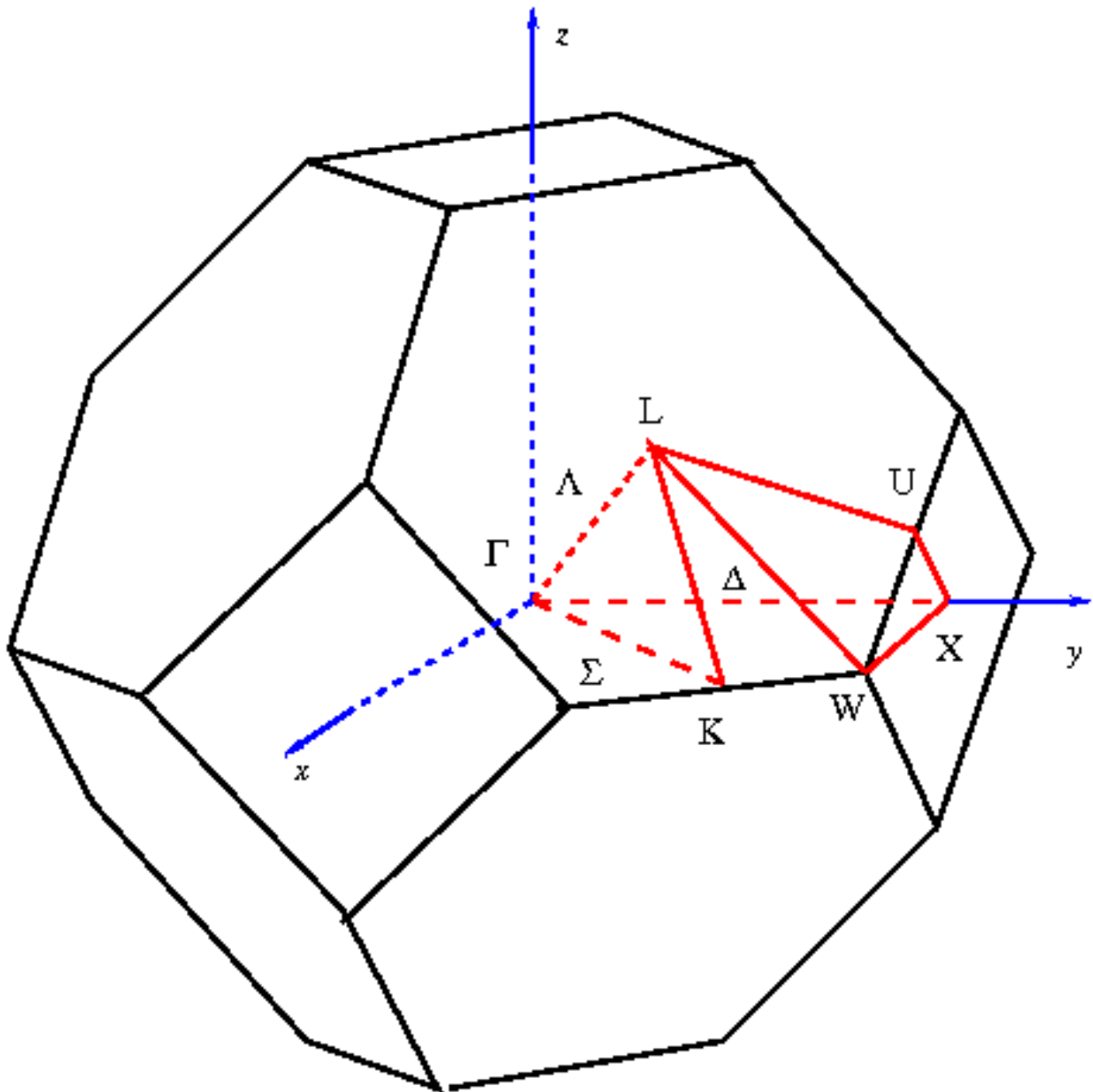
(reference atom is atom in face of conventional unit cube)



**Note: all twelve quadrangles come from bisecting planes to twelve nearest atoms.**

**This picture shows only four nearest neighbors in the y-z plane  
The other eight are found by rotating the square into the x-y  
and x-z planes, respectively.**

# First Brillouin Zone for fcc Lattice ("truncated octahedron")



# Naming Convention for Points in First BZ

| <u>Symbol</u>              | <u>Description</u>                                           |
|----------------------------|--------------------------------------------------------------|
| $\Gamma$                   | Center of the Brillouin zone                                 |
| <b>Simple cube</b>         |                                                              |
| M                          | Center of an edge                                            |
| R                          | Corner point                                                 |
| X                          | Center of a face                                             |
| <b>Face-centered cubic</b> |                                                              |
| K                          | Middle of an edge joining two hexagonal faces                |
| L                          | Center of a hexagonal face                                   |
| U                          | Middle of an edge joining a hexagonal and a square face      |
| W                          | Corner point                                                 |
| X                          | Center of a square face                                      |
| <b>Body-centered cubic</b> |                                                              |
| H                          | Corner point joining four edges                              |
| N                          | Center of a face                                             |
| P                          | Corner point joining three edges                             |
| <b>Hexagonal</b>           |                                                              |
| A                          | Center of a hexagonal face                                   |
| H                          | Corner point                                                 |
| K                          | Middle of an edge joining two rectangular faces              |
| L                          | Middle of an edge joining a hexagonal and a rectangular face |
| M                          | Center of a rectangular face                                 |