

How to find the Miller indices of a pentagonal dodecahedron?

The first step is to place the dodecahedron in a cubic reference frame. There are twelve faces, and each face is parallel to one axis. The ratio of the intersection of each face on the two other axes is directly given by the Fibonacci number $\tau = (1+\sqrt{5})/2$. In this case, the intersections are combinations of τ , 1 and ∞ . We shall require the inverse of τ which is obtained by the relation $\tau^{-1} = \tau - 1 = \phi$. The indices of the twelve faces are given on the figure with arrows indicating the hidden faces.

