

# Sorting Criterion for Slip and Twin system in HCP

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This document attempts to show how we sort the order of the slip and twin system for Hex (or hcp) structure in lattice.f90.

## 1 Slip system

An intersection between slip and basal plane is used in order to sort the slip system as illustrated in Figures 1 and 2. Numbers in Figures 1 and 2 indicate the sequence of each slip system in “lattice.f90”. In “lattice.f90”, No. 4 - 6 for basal and prism  $\langle a \rangle$  slip do not include (Figure 1). In Figure 2, pyramidal slip  $\langle c+a \rangle$  was used two criterions to sort the 12 slip systems; i) intersection between pyramidal slip plane and basal phae, and ii)  $\langle a \rangle$  direction.

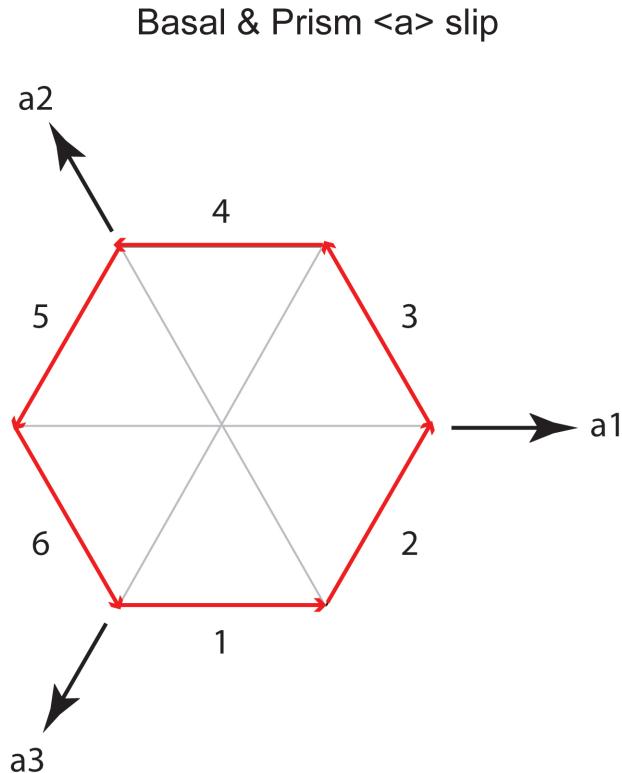
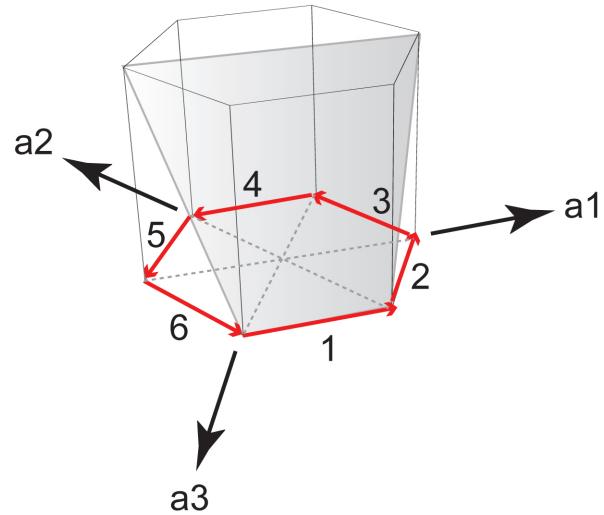
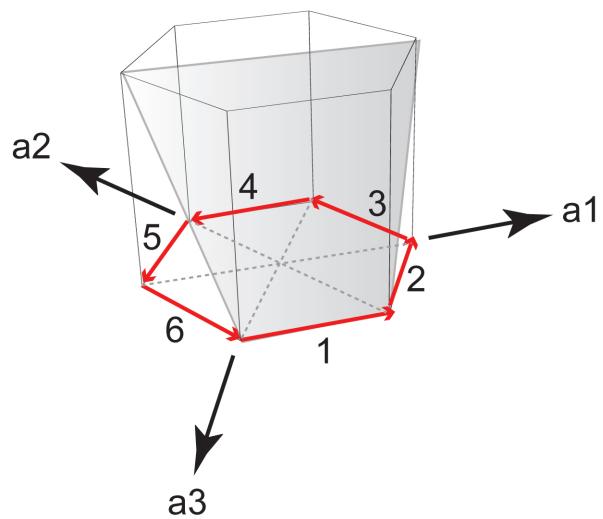


Figure 1: Basal and prism  $\langle a \rangle$  slip.

Pyramidal  $\langle a \rangle$  slip



Pyramidal  $\langle c+a \rangle$  slip



Pyramidal  $\langle c+a \rangle$  slip

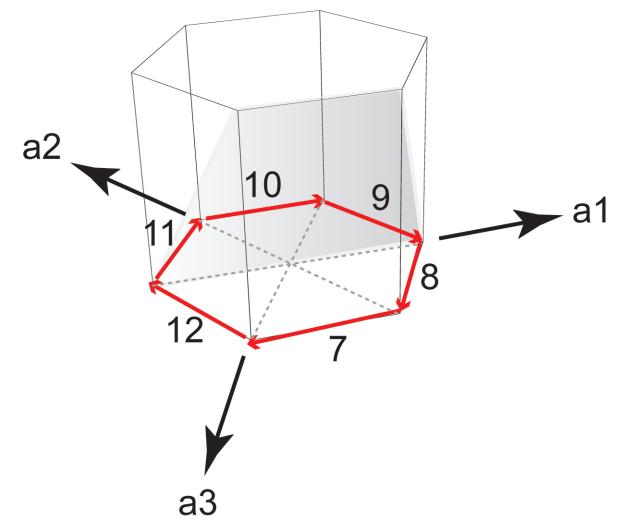


Figure 2: Pyramidal  $\langle a \rangle$  and  $\langle c+a \rangle$  slip.

## 2 Twin system

An intersection between twin and basal plane is used in order to sort the twin system as illustrated in Figures 3 and 4. Numbers in Figures 3 and 4 indicate the sequence of each twin system in “lattice.f90”.

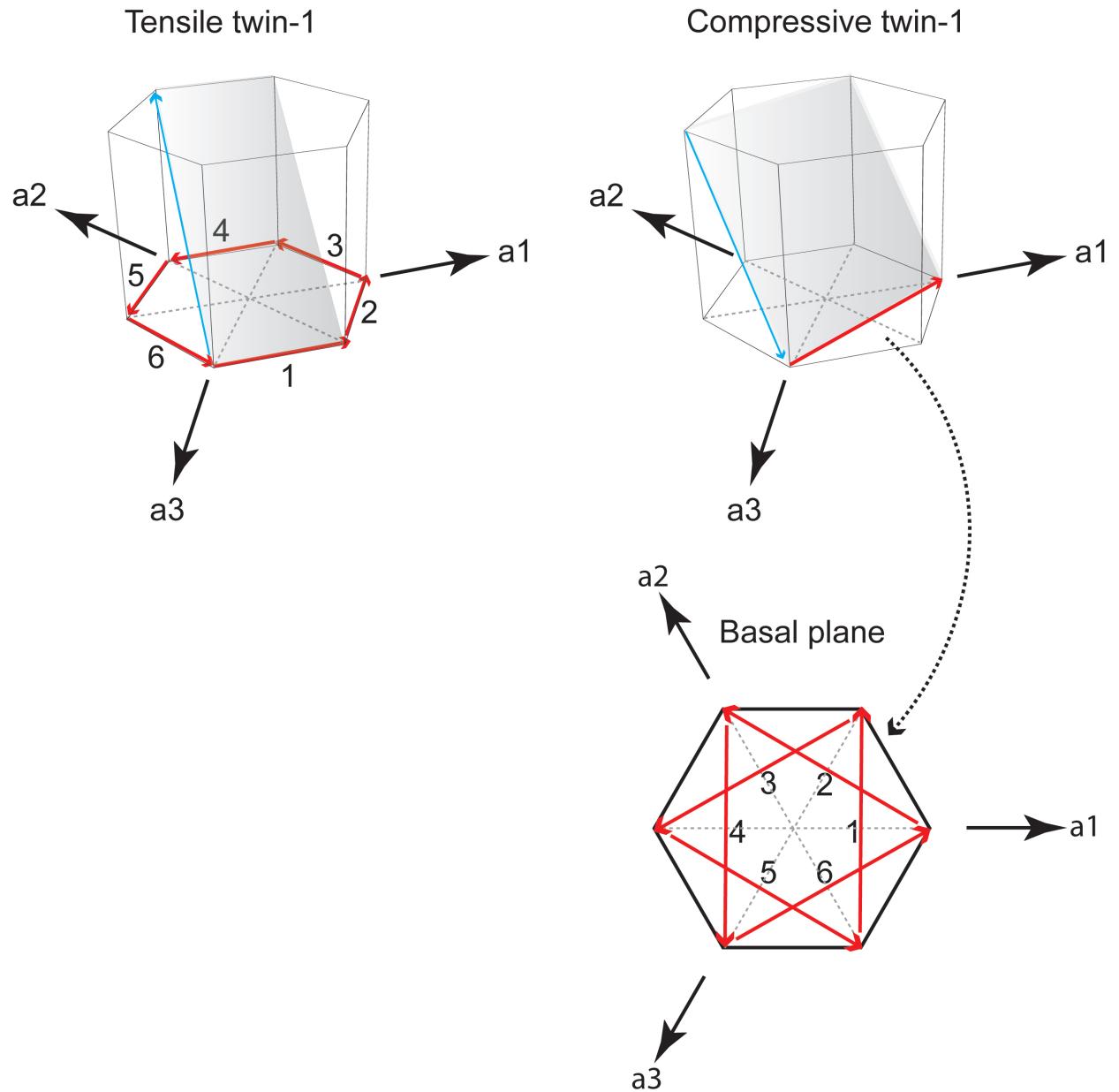


Figure 3: Tensile and compressive twin type 1

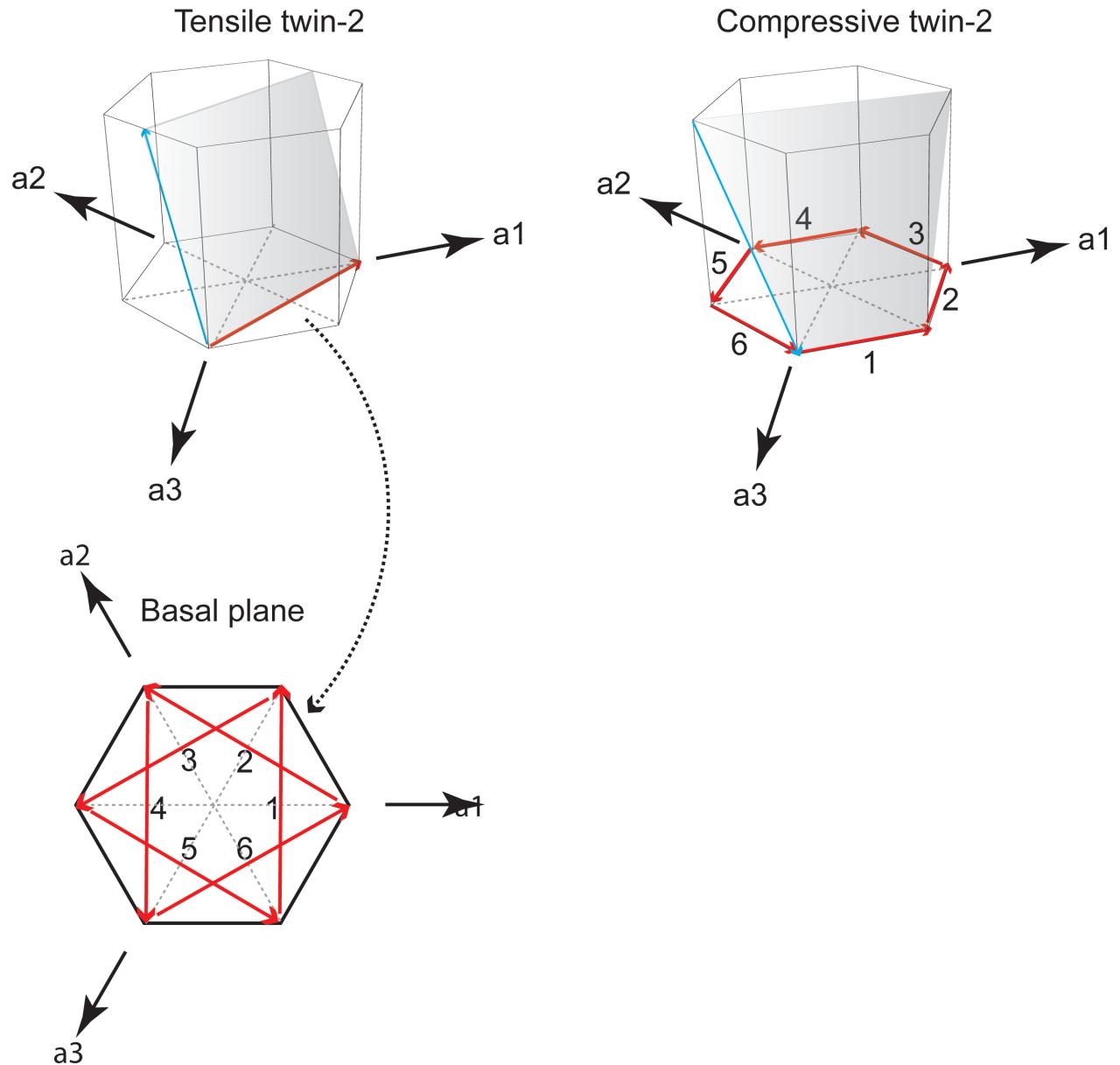


Figure 4: Tensile and compressive twin type 2