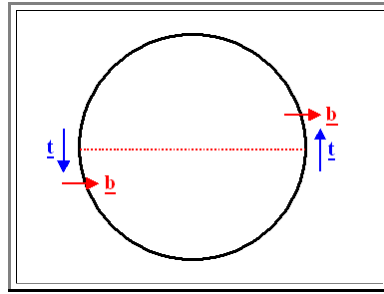


Solution to Exercise 5.1-1 "Sign of Burgers and Line Vectors"

The problem is solved easily by doing one simple thing: Look at the dislocation loop from above

Illustration



- After assigning a direction of $\underline{t}$, it is defined for the whole loop. At the places where we took the cross-section, it is actually the sign of $\underline{t}$ that is reversed! The Burgers vector thus must be "the other way around" if it is to be constant for the local $\underline{t}$.

It is important to realize that we only can be unambiguous if we know that we are looking at *one and the same dislocation*. The cross-section by itself does not tell us that fact; it just as well could show two unconnected single dislocations. In this case we would assign Burgers vectors with different signs because we "automatically" would take the line direction to be the same.