

Solution to Exercise 5.1-2 "Find the Mistake"

- ▶ The first animation contains two mistakes; a rather big one and a smaller one:
 - Small mistake: The lattice planes do not bent in the fashion shown while the dislocation is moving. To be sure, nobody knows exactly how they move, but the S-like shape is rather unlikely.
 - More serious: After the dislocation has left the crystal, there is no reason for any elastic deformation! The lattice planes would be absolutely straight and not curved as shown.
- ▶ The second animation contains a little mistake:
 - In the last two slides of the animation, the whole row of atoms just below the glide plane moves. This is not correct; regions far away from the dislocation core will not move perceptibly
 - However, this movement was obviously induced to achieve the strain-free state after the dislocation moves out. It corrects for the small deviation in all atomic positions which are not contained in the animation because the "artist" only changes the position of a few atoms around the dislocation core for every frame of the animation.
 - **Hint:** You can see this very clearly if you shift manually from slide to slide by moving the bar in the viewer menu back and forth with the mouse at the right position.