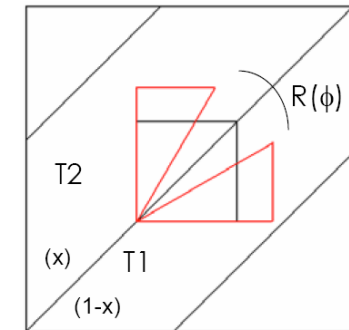
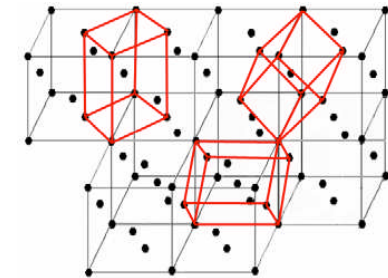


Objective

The constitutive model developed in M2i research project “Tailoring of processable metastable steels” can successfully describe the mechanical behavior of metastable austenitic stainless steel under deformation.

This material model describes the mechanically induced martensitic transformation as a stress-driven process rather than a strain-induced one, and it requires much less fitting parameters compared to the current models used in the industry, e.g. to simulate the forming of shaver heads.

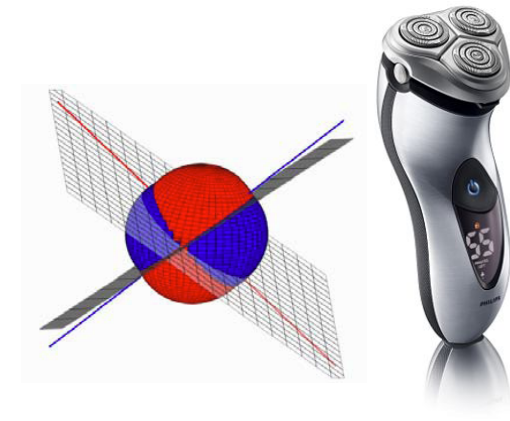


Research topics

- Implementation of the constitutive model consisting of two main parts:
 - Prediction of the amount of martensitic transformation and
 - Homogenization of elastic-plastic composites.

Industrial benefits

- The constitutive models that have been implemented in the implicit FE software DiekA (developed and maintained by University of Twente) are now transferred to commercial software MSC.Marc. The use of commercial software is preferable for the implementation of user defined material subroutines in practice.
- The routines in MSC Marc were successfully tested on selected cases and transferred to Philips.



Using a stress based transformation model for forming of metastable steels – Philips DAP