Prediction of the Behavior of 304L Stainless Steel under Uniaxial and Biaxial Cyclic Loading

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Abstract : This work focuses on the simulation of the prediction of the behaviour of austenitic stainless steel (SS) 304L under complex loading in stress and imposed strain. The Chaboche model is a cable to describe the response of the material by the combination of two isotropic and nonlinear kinematic work hardening, the model is implemented in the ZébuLon computer code. First, we represent the evolution of the axial stress as a function of the plastic strain through hysteresis loops revealing a hardening behaviour caused by the increase in stress by stress in the direction of tension/compression. In a second step, the study of the ratcheting phenomenon takes a key place in this work by the appearance of the average stress. In addition to the solicitation of the material in the biaxial direction in traction / torsion.