

# **A multicomponent kinematic hardening model with sequential distortional hardening**

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## **ABSTRACT**

A new model focused on transitional states of distortion of the yield surface is proposed. Yield surface shapes detected in [1] strongly suggest that distinct directions of distortion are present. In this particular case, they are emphasized by mutual orthogonality of the parts of the prestress sequence, which limits mutual influence. A new distortional transformation is derived, that enables its multiple application on top of each other. Rather than assigning a single distortion to a recognized section of prestress history, the backstress components evolve in a more natural way, creating an innate hierarchy. Components already evolved in orthogonal direction to the plastic flow are less accepting of change. A strong focus is put on a smooth elastic-plastic transition and on equivalent plastic strain distribution surrounding the yield surface, as it represents the extension of the effect of yield surface distortion.

## **REFERENCES**

- [1] A. PHILLIPS, J.-L. TANG. The effect of loading path on the yield surface at elevated temperatures. *International Journal of Solids and Structures* 8(4), 463–474, (1972).

## **ACKNOWLEDGEMENTS**

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