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ERRATUM

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Erratum to: The role of dissipation and defect energy in variational formulations of problems in strain-gradient plasticity. Part 1: polycrystalline plasticity

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Unfortunately, a paragraph in the published version of the article contained mistakes. The corrected version is printed below:

2.4 Alternative forms for the dissipation

2.4.1 The Fleck-Willis quadratic form

Paragraph 2 should read:

Following [10] a scalar stress quantity σ_{dis} conjugate to $\dot{e}^p$ is defined in such a way that

$$\sigma_{\text{dis}}^2 = \Sigma_{\text{dis}} : \mathsf{D}\Sigma_{\text{dis}},$$

where D is the inverse of A in the sense that $\mathsf{D}(\mathsf{A}\Gamma) = \Gamma$ and $\mathsf{A}(\mathsf{D}\Sigma) = \Sigma$. The identity $\Sigma_{\text{dis}} : \dot{\Gamma} = |\Sigma_{\text{dis}}|_2|\dot{\Gamma}|_2$ which follows from (2.32) and (2.33) is recovered as a special case by setting $\mathsf{A} = \text{diag}[\boldsymbol{I}_1, \ell_d \boldsymbol{I}_2]$, in which $\boldsymbol{I}_1$ and $\boldsymbol{I}_2$ are identity tensors of appropriate dimension. Then $\dot{e}^p = |\dot{\Gamma}|_2$ and $\sigma_{\text{dis}} = |\Sigma_{\text{dis}}|_2$. The yield function is

$$\bar{f}(\sigma_{\text{dis}}) = \sigma_{\text{dis}} - \Sigma_Y(e^p) \le 0$$

and the associative flow law becomes

$$\dot{\Gamma} = \lambda \frac{\partial \bar{f}}{\partial \Sigma_{\text{dis}}} = \lambda \frac{\mathsf{D}\Sigma_{\text{dis}}}{\sigma_{\text{dis}}}$$

in which $\lambda = \dot{e}^p$, together with the complementarity relations $\lambda \ge 0, \ , \bar{f} \le 0, \ , \lambda \bar{f} = 0$.......

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