

Erratum

Erratum to “Mixed-mode  $J$ -integral formulation and implementation using graded elements for fracture analysis of nonhomogeneous orthotropic materials”  
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The typographical errors should be corrected as listed below.

The constant terms  $\sigma_{22}^0$  and  $\sigma_{12}^0$  in Eq. (8) on p. 109 should be deleted, and thus Eq. (8) should be corrected as follows:

$$\begin{aligned} \sigma_{11} &= \frac{K_I}{\sqrt{2\pi r}} \operatorname{Re} \left[ \frac{\mu_1^{\text{tip}} \mu_2^{\text{tip}}}{\mu_1^{\text{tip}} - \mu_2^{\text{tip}}} \left\{ \frac{\mu_2^{\text{tip}}}{\sqrt{\cos \theta + \mu_2^{\text{tip}} \sin \theta}} - \frac{\mu_1^{\text{tip}}}{\sqrt{\cos \theta + \mu_1^{\text{tip}} \sin \theta}} \right\} \right] \\ &+ \frac{K_{II}}{\sqrt{2\pi r}} \operatorname{Re} \left[ \frac{1}{\mu_1^{\text{tip}} - \mu_2^{\text{tip}}} \left\{ \frac{(\mu_2^{\text{tip}})^2}{\sqrt{\cos \theta + \mu_2^{\text{tip}} \sin \theta}} - \frac{(\mu_1^{\text{tip}})^2}{\sqrt{\cos \theta + \mu_1^{\text{tip}} \sin \theta}} \right\} \right] + \sigma_{11}^0 + \dots \\ \sigma_{22} &= \frac{K_I}{\sqrt{2\pi r}} \operatorname{Re} \left[ \frac{1}{\mu_1^{\text{tip}} - \mu_2^{\text{tip}}} \left\{ \frac{\mu_1^{\text{tip}}}{\sqrt{\cos \theta + \mu_2^{\text{tip}} \sin \theta}} - \frac{\mu_2^{\text{tip}}}{\sqrt{\cos \theta + \mu_1^{\text{tip}} \sin \theta}} \right\} \right] \\ &+ \frac{K_{II}}{\sqrt{2\pi r}} \operatorname{Re} \left[ \frac{1}{\mu_1^{\text{tip}} - \mu_2^{\text{tip}}} \left\{ \frac{1}{\sqrt{\cos \theta + \mu_2^{\text{tip}} \sin \theta}} - \frac{1}{\sqrt{\cos \theta + \mu_1^{\text{tip}} \sin \theta}} \right\} \right] + \dots \end{aligned}$$

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$$\begin{aligned} \sigma_{12} = & \frac{K_I}{\sqrt{2\pi r}} \operatorname{Re} \left[ \frac{\mu_1^{\text{tip}} \mu_2^{\text{tip}}}{\mu_1^{\text{tip}} - \mu_2^{\text{tip}}} \left\{ \frac{1}{\sqrt{\cos \theta + \mu_1^{\text{tip}} \sin \theta}} - \frac{1}{\sqrt{\cos \theta + \mu_2^{\text{tip}} \sin \theta}} \right\} \right] \\ & + \frac{K_{II}}{\sqrt{2\pi r}} \operatorname{Re} \left[ \frac{1}{\mu_1^{\text{tip}} - \mu_2^{\text{tip}}} \left\{ \frac{\mu_1^{\text{tip}}}{\sqrt{\cos \theta + \mu_1^{\text{tip}} \sin \theta}} - \frac{\mu_2^{\text{tip}}}{\sqrt{\cos \theta + \mu_2^{\text{tip}} \sin \theta}} \right\} \right] + \dots \end{aligned} \quad (8)$$

Eq. (33) on p. 113 should be corrected as follows:

$$[W^+ - W^-] = \frac{1}{\sqrt{2\pi r}} F + O(r^{1/2}) \quad (33)$$

The wording following Eq. (33) on p. 113 should be corrected as follows: “where  $F = F(K_I, K_{II}, \sigma_{11}^0, E_{11}(r), E_{22}(r), G_{12}(r), \nu_{12}(r))$ .”