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Shear Confusion: Identification of the Appropriate Equivalent Strain in Simple Shear using the Logarithmic Strain Measure

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**Highlights:**

- Experimental shear tests using DIC have adopted an incorrect definition for the equivalent strain
- Significant errors in the equivalent strain can result if proportional loading is assumed
- The work-conjugate equivalent strain for finite simple shear loading is derived
- The logarithmic strain measure and objective rate integrate to the exact finite strain solution

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