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2.2. Surface operations and projections

3.1.3. Relationship between macroscopic and microscopic interface strains

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To establish a relation between matrix $\mathbf r$ deformation, we first introduce the microscopic displacement gra- $\tilde{\chi}$, $\partial \tilde{u}/\partial \xi$ $\qquad \tilde{u}~ \xi_n, \xi_s, \xi_t$ associated with the interface. Interface, interface, $\mathbf{T}_\text{max} = \mathbf{T}_\text{max}$ $\tilde{\boldsymbol{\chi}}\,\, \tilde{\boldsymbol{\zeta}}_{\rm n}, \, \tilde{\boldsymbol{\zeta}}_{\rm s}, \, \tilde{\boldsymbol{\zeta}}_{\rm t})$ $n,$ $\tilde{\pmb{\chi}}\, \xi_{\rm n}, \xi_{\rm t}, \xi_{\rm s})$, $\langle \tilde{\pmb{\chi}} \rangle \, \xi_{\rm t}, \xi_{\rm s} \rangle$ / $\langle \langle \tilde{\pmb{\chi}} \rangle \rangle \, \xi_{\rm t}, \xi_{\rm s} \rangle \xi_{\rm n}$ / $\phi \, \xi_{\rm n}^2$ 22 $\langle \tilde{\bm{\chi}} \rangle$ and $\langle \langle \tilde{\bm{\chi}} \rangle \rangle$ gradients and its normal variation, respectively. Note that the above t approximation differs from the standard Taylor series expansion in $\mathbf T$

4. Mass conservation

Upc5 0 Tcombin.1(s)-27F7 46.7(o)0(n)-2ar

 $\tilde{\rho}^{\alpha}~\xi_{\rm n}, \xi_{\rm t}, \xi_{\rm s}\rangle ~,~~ \langle\tilde{\rho}^{\alpha}\rangle~\xi_{\rm t}, \xi_{\rm s}\rangle ~,~~ \langle\langle\tilde{\rho}^{\alpha}\rangle\rangle~\xi_{\rm t}, \xi v$

 $\tilde{\mathbf{v}}$ $\tilde{\mathbf{e}}$ $\dot{\tilde{\mathbf{e}}}^v$ (2) and (1) for volume (2) for volume α the zeroth and first-order equations for solid \mathcal{L}_{max} $\frac{D\bar{\rho}^s}{Dt}$, $\bar{\rho}^s \dot{e}_s^v$, $\bar{\bar{\rho}}^s I \dot{e}_m^v$, 0 $\frac{\mathrm{D}\bar{\bar{\rho}}^{\mathrm{s}}}{\mathrm{D}t}$, $\bar{\bar{\rho}}^{\mathrm{s}}\mathrm{\dot{e}}_{\mathrm{s}}^{\nu}$, $\bar{\rho}^{\mathrm{s}}\mathrm{\dot{e}}_{\mathrm{m}}^{\nu}$, 0, where the quantity I is a moment of inertia-like quantity defined as: $I \frac{1}{h^3}$ $h/2$ $\int_{h/2}^{h/2} \xi_n^2 d\xi^n$, $\frac{1}{12}$. $\bar{\rho}$ describes the change interface density $\bar{\rho}$ $\bar{\rho}^{\rm s}$

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\delta E_{int} \int_{\alpha}^{s} \text{div} \mathbf{T} \cdot \delta u \, dV \int_{r}^{s} \mathbf{t}_{s} \cdot \delta u \, d\mathbf{l} \, dt \, dV \int_{r}^{s} \mathbf{t}_{s} \cdot \delta u \, d\mathbf{l} \, dt \, dV \int_{r}^{s} \mathbf{T} \cdot \mathbf{T} \cdot \mathbf{n} \cdot \delta u \, dS \int_{\partial\Omega}^{s} \mathbf{T} \cdot \mathbf{T} \cdot \delta u \, dS
$$
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$$
\int_{\xi_{i}}^{s} \mathbf{T}_{s} \cdot \mathbf{m} \cdot \delta u \, d\ell \int_{\xi_{e}}^{s} \mathbf{T}_{s} \cdot \mathbf{m} \cdot \delta \{u\} \cdot \mathbf{T}_{m} \cdot \mathbf{m} \cdot \delta u \, d\ell \, d\mathbf{l}
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\overline{n} \qquad \qquad \mathbf{T} \cdot \mathbf{n} \qquad \delta \Omega \qquad \mathbf{m}
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\mathbf{T} \cdot \mathbf{n} \qquad \delta \Omega \qquad \mathbf{m}
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\mathbf{T} \cdot \mathbf{n} \qquad \delta u \qquad \mathbf{u} \q
$$

$$
\delta u\text{\hskip.3cm,}\hspace{0.2cm} 0 \qquad \partial \Omega^u,\quad \delta \, u\text{\hskip.3cm,}\hspace{0.2cm} 0 \qquad \quad \ell_e^u \qquad \qquad \delta \{u\}\text{\hskip.3cm,}\hspace{0.2cm} 0 \qquad \quad \ell_e^u,
$$

that the expression is true for any arbitrary fields $\delta u_r(\delta u)$ and δu

 $divT$, b] $T_s \cdot m\delta x$ (100 f(1016) $\frac{3}{2}$ $\frac{3}{2}$ 8.
3 $\overline{}$.219 Tc 1.
3 .9=a148t(n)2F 1m $\overline{1}$

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f_{\rm{max}}
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applying the divergence theorem. This leads to an alternative theorem. This leads to an alternative theorem.

