<table>
<tr><th rowspan="2">cases</th><th>doc_1</th><th>doc_2</th><th>decision</th><th>id</th></tr>
<tr>
<td>
<table>
<tr><th>authors</th><td>Johannes Lankeit
Patrizio Neff
Frank Osterbrink</td></tr>
<tr><th>title</th><td>Integrability conditions between the first and second Cosserat deformation tensor in geometrically nonlinear micropolar models and existence of minimizers</td></tr>
<tr><th>publication_date</th><td>2015-04-29 00:00:00</td></tr>
<tr><th>source</th><td>SupportedSources.OPENALEX</td></tr>
<tr><th>journal</th><td>arXiv (Cornell University)</td></tr>
<tr><th>volume</th><td></td></tr>
<tr><th>doi</th><td>None</td></tr>
<tr><th>urls</th><td>https://openalex.org/W2952731335</td></tr>
<tr><th>id</th><td>id2291445901326953045</td></tr>
<tr><th>abstract</th><td></td></tr>
<tr><th>versions</th><td></td></tr>
</table>
</td>
<td>
<table>
<tr><th>authors</th><td>Johannes Lankeit
Patrizio Neff
Frank Osterbrink</td></tr>
<tr><th>title</th><td>Integrability conditions between the first and second Cosserat deformation tensor in geometrically nonlinear micropolar models and existence of minimizers</td></tr>
<tr><th>publication_date</th><td>2015-04-29 20:03:35+00:00</td></tr>
<tr><th>source</th><td>SupportedSources.ARXIV</td></tr>
<tr><th>journal</th><td>None</td></tr>
<tr><th>volume</th><td></td></tr>
<tr><th>doi</th><td></td></tr>
<tr><th>urls</th><td>http://arxiv.org/pdf/1504.08003v1
http://arxiv.org/abs/1504.08003v1
http://arxiv.org/pdf/1504.08003v1</td></tr>
<tr><th>id</th><td>id-3748143012050796456</td></tr>
<tr><th>abstract</th><td>In this note we extend integrability conditions for the symmetric stretch tensor U in the polar decomposition of the deformation gradient $\nabla\varphi=F=R\,U$ to the non-symmetric case. In doing so we recover integrability conditions for the first Cosserat deformation tensor. Let $F=\bar R\,\bar U$ with $\bar R:\Omega\subset\mathbb{R}^3\longrightarrow\mathrm{SO}(3)$ and $\bar U:\Omega\subset\mathbb{R}^3\longrightarrow \mathrm{GL}(3)$. Then $\mathfrak{K}:={\bar R}^T\mathrm{Grad}\,{\bar R}=\mathrm{Anti}\Big(\frac{1}{\mathrm{det} \bar U}\Big[\bar U(\mathrm{Curl} \bar U)^T-\frac{1}{2} \mathrm{tr}(\bar U(\mathrm{Curl} \bar U)^T) 1\!\!1 \Big]\bar U\Big),$ giving a connection between the first Cosserat deformation tensor $\bar U$ and the second Cosserat tensor ${\mathfrak{K}}$. (Here, Anti denotes an isomorphism between $\mathbb{R}^{3\times 3}$ and $\mathfrak{So}(3):=\{\,\mathfrak{A}\in\mathbb{R}^{3\times 3\times 3}\,|\,\mathfrak{A}.u\in\mathfrak{so}(3)\;\forall u\in \mathbb{R}^3\}$.) The formula shows that it is not possible to prescribe $\bar U$ and $\mathfrak{K}$ independent from each other. We also propose a new energy formulation of geometrically nonlinear Cosserat models which completely separate the effects of nonsymmetric straining and curvature. For very weak constitutive assumptions (no direct boundary condition on rotations, zero Cosserat couple modulus, quadratic curvature energy) we show existence of minimizers in Sobolev-spaces.</td></tr>
<tr><th>versions</th><td></td></tr>
</table>
</td>
<td>DUPLICATES</td>
<td>144</td>
</tr>
</table>