

cases	doc_1		doc_2		decision	id
	<div></div>		authors	<ul style="list-style-type: none">Johannes LankeitPatrizio NeffFrank Osterbrink	DUPLICATES	1116
			title	Integrability conditions between the first and second Cosserat deformation tensor in geometrically nonlinear micropolar models and existence of minimizers		
			publication_date	2015-04-29 20:03:35+00:00		
			source	SupportedSources.ARXIV		
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			urls	<ul style="list-style-type: none">http://arxiv.org/pdf/1504.08003v1http://arxiv.org/abs/1504.08003v1http://arxiv.org/pdf/1504.08003v1		
			id	id-3748143012050796456		
			abstract	In this note we extend integrability conditions for the symmetric stretch tensor U in the polar decomposition of the deformation gradient $\nabla\varphi=F=R\cdot U$ to the non-symmetric case. In doing so we recover integrability conditions for the first Cosserat deformation tensor. Let $F=\bar R\cdot\bar U$ with $\bar R:\Omega\subset\mathbb{R}^3\rightarrow\mathrm{SO}(3)$ and $\bar U:\Omega\subset\mathbb{R}^3\rightarrow\mathrm{GL}(3)$. Then $\mathfrak{K}:=\{\bar R^T\mathrm{Grad}\cdot\bar R=\mathrm{Anti}\cdot\mathrm{Big}(\frac{1}{\det\bar U}\mathrm{Big}[\bar U(\mathrm{Curl}\bar U)^T-\frac{1}{2}\mathrm{tr}(\bar U(\mathrm{Curl}\bar U)^T)-\frac{1}{3}\mathrm{Big}]\bar U\mathrm{Big}),$ 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 $\mathfrak{So}(3):=\{\frac{1}{\det A}\mathrm{tr}(A)\mathrm{Curl}\cdot A\in\mathfrak{so}(3)\}$.) 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.		
	versions					
	<div></div>		authors	<ul style="list-style-type: none">J. LankeitP. NeffFrank Osterbrink		
			title	Integrability conditions between the first and second Cosserat deformation tensor in geometrically nonlinear micropolar models and existence of minimizers		
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			journal	Zeitschrift für angewandte Mathematik und Physik		
			volume	68		
doi			10.1007/S00033-016-0755-7			
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id	id7322730746194050513					
abstract	None					
versions						