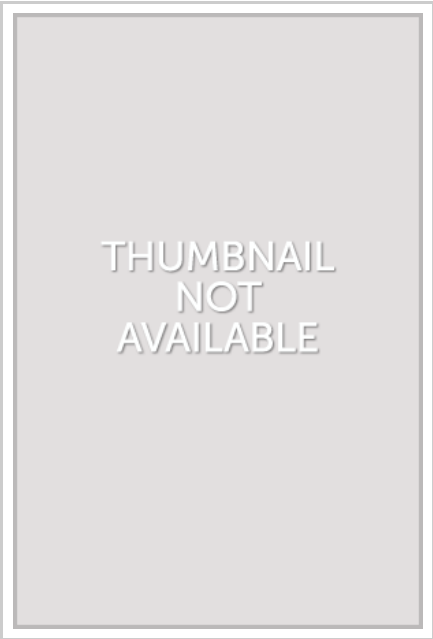

FE model of fibre composite based on large strain Cosserat elasticity

By Tomas Lasota

SPS Okt 2014, 2014. Taschenbuch. Book Condition: Neu. 220x150x10 mm. Neuware - Composite materials can be found increasingly in many practical applications in various fields of technology. A sophisticated design of such materials or assessment of their stress-strain states are very important for their proper use in practice. For this purpose, computational models based on finite element method are commonly used. The book deals with simulations and experiments of composite materials which are made of elastomer matrix and steel reinforcing fibres. The simulations were performed using current advanced computational models, and the results were compared with real experiments. Mutual comparison showed that not even the best ones of current models were able to provide credible results in case of bending mode of the steel fibres. Hence a new computational model which is able to account for both tension and bending of fibres has been developed. This new model is based on Cosserat continuum where displacements and rotations can be considered as independent variables. A new FE solver using so called C1 elements had to be written for hyperelastic anisotropic constraint Cosserat continuum since no available commercial software was capable to work with this continuum. 160 pp. Englisch.

Reviews

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