ONLINE ISSN : 1880-1986
PRINT ISSN : 1346-8235

Journal of Textile Engineering
Vol. 54 (2008) , No. 4 103-110

[PDF (1425K)] [References]

Prediction of Fabric Drape Behaviour using Finite Element Method

B K Behera[1)], Ajit Kumar Pattanayak[1)] and Rajesh Mishra[1)]

1) Department of Textile Technology, Indian Institute of Technology

(Received April 18, 2007)
(Accepted for publication May 19, 2008)

Abstract: In this study, an attempt has been made to predict the drape profile of woven fabrics using finite element analysis. The finite element method has been used in the prediction of structural instability and post buckling behaviour. The drape parameters like Drape coefficient, Drape distance ratio, Fold depth index, Amplitude to radius ratio and Number of nodes predicted by finite element analysis were correlated with those measured by Digital Image Processing method. The correlation between digital image processing method and finite element analysis proves to be very good. In all cases, R^2 value is found to be higher than 0.8. In particular maximum correlation (R^2= 0.91) is found in case of drape coefficient, because it is based on the project area of draped fabric in both the methods.

Key Words: Fabric drape, Finite element method, Digital image processing, Drape profile

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To cite this article:
B K Behera, Ajit Kumar Pattanayak and Rajesh Mishra, J. Text. Eng., Vol. **54**, p.103 (2008) .