



DEFORMATION FORECAST OF FLEXIBLE MATERIAL PROCESS BY SPLINE FINITE ELEMENT METHOD AND APPLICATION

Deng Yaohua, Li Bingjing, Chen Sicheng, Chen Jiyuan, Wu Liming

School of Information Engineering

Guangdong University of Technology, Guangzhou

Guangdong ,China

Email:dengyaohua@gdut.edu.cn

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Abstract- This paper provides a new computing method for the amount of deformation of flexible materials by spline finite element. Firstly, it analyzes the deformation of single yarn in the way of cubic spline interpolation, with the idea of spline finite element; it takes the flat fabric as anisotropic material to build a simple surface model with the use of bicubic interpolation, so as to deduce to the formula of flat fabric's deformational displacement under the stress. Finally, it takes the line graphic element for object to get the amount of deformation and to compensate it in quilting, test result show that the position error scope of quilting is 0.093~0.186mm, the accuracy is higher than excellence grade of quilting which refers to national standard FZ/T81005-2006.

Index terms: Flexible material process, Deformation calculation, Spline finite element.