



## LINKS BETWEEN DESIGN, PATTERN DEVELOPMENT AND FABRIC BEHAVIOR FOR CLOTHING AND TECHNICAL TEXTILES

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### ABSTRACT

*In this paper is shown the necessity for the development powerful 3D CAD-systems for the textile and clothing industry. The connection between 2D CAD-systems with 3D CAD-systems enables the user to prepare a collection more quickly and accurately. Applications could be the drape behavior of fabrics, the deformational behavior of fabrics when covering defined surfaces and also technical textiles.*

Keywords: CAD-system, simulation, material behavior, close-fitting garments, technical textiles

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### 1. INTRODUCTION

For garments the phases of product development and preparation of production require approximately triple the time of the actual garment life span. In order to compensate for the resulting greater efforts in the product preparation and to react more quickly and flexibly to the latest fashion, the use of complex CAD - CAM solutions is essential. Today there are many existing design programs with various software tools and a wide choice of designing functions. In connection with sketching-systems so called two and a half dimensional presentation programs can give an optical impression how the colors, motifs and materials look on a scanned model. Steps of product preparation such as pattern construction, grading, pattern planning and pattern optimization and the automated cutting are realized with computer assistance. However, commonly used CAD-systems available on the market show the following weak points:

- the systems work only in two-dimensions
- the material behavior and the material parameters are not taken into account.

Both these aspects are required for the three-dimensional display of a model with regard to the draping in order to give the designer and model maker a realistic impression of the model. Optimal possibilities to examine the correct fitting and the form of a model would be the three-dimensional display of a two-dimensional pattern construction on a dummy or a development of a three-dimensionally constructed model onto the two-dimensional plane, when the specific material parameters are taken into account. Therefore, the more detailed treatment of physical and mechanical properties and their correct mathematical and physical formulation is of interest [1, 2].