EXPLORATION OF THE GRAPHIC FORM OF A RAGLAN SLEEVE PRODUCT DESIGN

ИССЛЕДОВАНИЕ ГРАФИЧЕСКОЙ ФОРМЫ КОНСТРУКЦИИ ИЗДЕЛИЯ С РУКАВОМ ПОКРОЯ РЕГЛАН

Ovlyakulieva M. S.[1] , Getmantseva V. V.[1]

[1] The Kosygin State University of Russia, Russian Federation, e-mail: getmantseva@inbox.ru

Овлякулиева М. С.[1] , Гетманцева В. В.[1]

[1] Российский государственный университет им. А. Н. Косыгина, Российская Федерация

ABSTRACT

CONSTRUCTIVE MODELING, RAGLAN SLEEVE, PARAMETRIC DESIGN, GRAPHIC FORM, GARMENT DESIGNING, COMPUTER-AIDED DESIGN

The article presents the results of the exploration of graphic form of a raglan sleeve product design from the point of view of the drawing division into graphic elements. These graphic elements will be further described in parameters. This principle of parametric description will enable to formalize the stages of a raglan sleeve design and, in prospect, to develop algorithms for developing raglan sleeve product designs in parametric CAD.

АННОТАЦИЯ

КОНСТРУКТИВНОЕ МОДЕЛИРОВАНИЕ, РУКАВ ПОКРОЯ РЕГЛАН, ПАРАМЕТРИЧЕСКОЕ ПРОЕКТИРОВАНИЕ, ГРАФИЧЕСКАЯ ФОРМА, КОНСТРУИРОВАНИЕ ОДЕЖДЫ, АВТОМАТИЗИРОВАННОЕ ПРОЕКТИРОВАНИЕ

В статье изложены результаты исследования графической формы конструкции изделия с рукавом покроя реглан с точки зрения разбиения чертежа на графические элементы. В дальнейшем эти графические элементы будут параметрически описаны. Такой принцип параметрического описания позволит формализовать этапы построения рукава покроя реглан и в перспективе разработать алгоритмы для проектирования конструкций изделий с рукавом покроя реглан в параметрических САПР.

Raglan designing is a complex multifactorial process. Currently, raglan sleeve products design is a weakly formalized process. This is due to the following facts:

• there is no clear and unambiguous algorithm for raglan sleeve products design (practically all methods contain stages with recommended values of design parameters,

as well as a descriptive sequence of actions, the result of which depends on the designer's experience) [1];

• the algorithm for the raglan sleeve product appearance forecasting on the basis of design parameters is not developed;

• the method for reading the sketch, on the basis of which the values of design parameters in the design are determined, is not developed.

As a result of the reasons listed above, the process of raglan sleeve products designing and manufacturing is accompanied by numerous fittings and adjustments.

Automation tools active development, within the framework of the computer-aided design of sketch designs [2, 3], basic designs [4], model designs [5] predetermines the need for formalization and algorithmization of raglan sleeve products designing process. Orientation of the product design process in a three-dimensional environment [6] and active use of virtual space for fittings [7] and simulation modeling of products model characteristics [8] have a great influence on the modern development of garment design theory, as well.

Within the framework of the undertaken exploration, the graphic form of the raglan sleeve product was analyzed from the point of view of the drawing division into graphic elements in order to further develop the system of parameters controlling the product form. With the help of this system, a parametric description of the construction and the spatial form of the raglan sleeve product will be developed further. These explorations are based on the methodology described in the article «Generalized model of parametric garment designing process» [9].

At the first stage of work the product construction was divided into component graphic elements. There are 18 graphic elements. By changing a geometry of these elements, it is possible to obtain a variety of raglan sleeve products forms. In these explorations, the main part was not considered in detail, therefore it is represented in the table as a single element. Its more detailed study is expected in the future.

Groups of geometric elements (GE) are defined in terms of:

• geometric characteristics of raglan sleeve products spatial form;

• possibility of developing a rational system of design parameters which describe a raglan sleeve product spatial form and design;

• possibility of developing a construction algorithmic description.

Development of a system of product design graphic elements was carried out in the following sequence:

• design dividing into the product parts (front and back parts of the design are distinguished);

• design dividing into graphic sections according to the structural lines levels (top, central, bottom parts are distinguished);

• graphic sections dividing due to location on the arm surface (inner, outer surface of the sleeve are distinguished).

As a result of the work, the following GEs are distinguished:

• Front/back part of the raglan
• Front/back top part of the sleeve cap
• Front/back bottom part of the sleeve cap
• Front/back bottom inner part of the sleeve cap
• Front/back central outer part of the sleeve
• Front/back central inner part of the sleeve
• Front/back bottom outer part of the sleeve
• Front/back bottom inner part of the sleeve
• Front/back part of the body.

The next stage of the research is the description of graphic fragments with the help of which the geometric shape of the graphic element is formed. For example, the front (rear) part of the raglan is defined by the lines: the upper section of the neck slice, shoulder section, the conditional armhole line, the upper section of the raglan line.

For each line, you can define three parameters by which it will be possible to change its shape and position — these are the parameters of the starting and ending points of the line and the shape of the line. Having determined the whole set of parameters for the raglan design, in the future it is proposed to develop a technique for parametric design of clothing designs with a raglan sleeve.

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