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Sparseness and Compactness Shaping Process in Knitwear

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Abstract: Knitted garment design requires a variety of knitting techniques to create its unique aesthetic. The knitting pattern formed by the collection of loops and the contrast of sparseness and density is one of the important ways to expand the knitted garment design methods. The author combines his own research on knitted garment design methods and knitting techniques, starting from the relationship between sparseness and compactness, sparseness and compactness structure and expression, and starting from observation, reflection and analysis of "sparse and dense modeling techniques", starting from the concept of sparse and dense modeling techniques, and summarizing the characteristics of sparse and dense modeling techniques in knitted garments through practice. For example, stretch-induced characteristics, characteristics caused by rolled edge, characteristics caused by dispersion and Characteristics caused by anti-wrinkle properties. We also discuss the visual and tactile aspects of dense shaping, relying on the garment itself, we combine color, yarn, organization and silhouette to form a practical sparse shape with visual aesthetics. And its irregular tactile effects and innovations. Explore the role of dense shaping in knitwear design, such as enriching the design of knitted patterns and styles, and improving aesthetic value, in order to provide some references for knitwear designers to establish a concrete link between design and technology. The development of traditional craftsmanship and the use of new modern technologies have given room for the application of sparse and dense modeling concepts and the study of knitting techniques. It provides some references for knitwear designers to establish specific links between design and process.

Keywords: Knitted Garments, Sparseness and Compactness, Knitting Process

1. Introduction

The design of knitted garments is different from ordinary woven fabrics, which can be made into garments through the process of cutting, sewing and post-treatment of fabrics. It is necessary to change the yarn from "thread" to "surface" and to complete the design expression of knitted garments under the role of thread and different processes [7]. In this process, the richness of the knitting process is the main means to complete the final design. For example, the yarn is arranged on different needles and exchanged through the combination of needles to form a new curved variation. The combination of the needle's "point" and the loop's "line" creates a sparse shape and curved layout [3-6].

2. The Way of Sparseness and Compactness

The concept of sparse and dense modeling processinates from nature. It exists like breathing in the creative expression of any kind of art. The Chinese Song Dynasty lyricist and calligrapher Jiang Kui said of the layout of calligraphy, "A book should be sparse for the style and spirit, and dense for the old air. For example, the four horizontal lines of 'Jia', the three straight lines of 'Chuan', the four dots of 'Fish', and the nine paintings of 'Painting' must be written It is better to be strong and clean, sparse and dense to stop evenly [8]. When sparse not sparse, but into a cold beg; when dense not dense, will be to wither sparse." Sparse and dense forms can play a direct role in the expression of the thoughts and moods of the art

creator's works. In painting, sculpture, architecture, and dance, as well as in the printing of clothing fabrics, silhouettes, and structures, there are works in which the contrast between sparseness and density is used to express reality, subjectivity, and movement. There are also works that express rhythm and inner connection as well as individual characteristics, and there are numerous contents that use sparse and dense to express the subject and visual beauty [14].

Sparse and dense are independent of each other, and can be set off from each other. When sparse and dense together, they complement each other's interests, and when separated and contrasted, they have their own semantics. This modeling technique is applied to the design of knitted garments to show this relationship through various techniques and expressions. The more this is done, the more the characteristics of each other can be highlighted, and the more the design features are revealed [1-2].

Knitted garment design is different from the general woven garment design: the designer's choice of yarn, the creation of fabric organization, the different arrangements of the color style design and post-processing processes directly affect the final design result. The different treatment of each process in these processes has a certain influence on the sparseness of the pattern. Different weaving methods for the same pattern, different combinations of patterns and different post-processing techniques will also affect the final sparse effect of the woven piece.

3. The Characteristics of the Sparse Modeling Process

As a special performance process in knitted garments, the sparseness modeling process has the basic characteristics of knitted fabrics as well as its own unique features. The special composition and basic characteristics of knitted fabric as well as the forming rules of the sparseness process itself make the knitted fabric under the sparseness process have special design effects and modeling characteristics.

3.1. Stretch-Induced Characteristics

As knitted garments are made of coils woven in series with each other, and the coils in the woven arrangement of the fabric have large gaps, under the action of external forces will produce a large stretch, the stretch rate varies according to the stitch and wire. Knitted garments therefore feel soft, with excellent elasticity, when wearing can meet the bending and stretching of various parts of the human body.

According to this feature, in the design of the use of different yarns and stitch organization, and the combination of different stretch rate of the woven piece, is the formation of the woven piece sparse and dense level changes [9-11]. The shrinkage rate of the woven piece, the density organization and the pattern arrangement can form the change of the stretch rate of the woven piece. By combining this feature with the need for sparseness, we can create a knitted garment with a rich rhythm of sparseness. For example, in the cuffs and collars of knitted garments and other parts of the Rowan process, this knitting process makes the garments have greater elasticity and stretch, not only easy to put on and take off, but also make the overall effect of the garment more fitting, in different stretching situations, there are different sparse and dense effect [12].

3.2. The Characteristics Caused by the Rolled Edge

Knitted tissue in the free state after knitting, the edge of the fabric will appear natural rolled edge phenomenon. This rolled edge characteristics if used in the design, can form a variety of clever sparseness modeling. It is combined with the more loose or flat organization can also produce a unique contrast effect.

3.3. The Characteristics Caused by the Dispersion

Knitted garments are made of one or several coils looped around each other. Therefore, when there is a break in the yarn or a broken link in the loop, the woven piece will form a certain amount of dispersion, or the yarn comes out and the loop separates. This dispersion has always been considered a drawback of knitted garments. However, with the diversification of design methods and advances in knitting technology, this feature can also be exploited by designers to create a unique sparse effect. By combining such a loose knit with a flat knit, the contrast and visual rhythm of sparse and dense knitting is immediately apparent. The dislodged pieces can also be spliced with other woven fabrics to create a sparse and dense texture.

3.4. Characteristics Caused by Wrinkle Resistance

The formation method of knitting in a series of coils makes the stress points of each coil different, so it is less likely to appear the phenomenon of pressure folding, so knitted garments have better wrinkle resistance than woven garments. Using this, the opposite of knitted garments using high-pressure high-temperature post-treatment methods, in accordance with the different arrangements, the formation of some pleats or woven sewing methods to sew together some pleated texture will have a different effect than the woven pleats.

There are many other characteristics of knitted garments, basically depending on its knitting yarn and pattern organization. These characteristics can be maximized according to different styling needs. Combining these features with the sparseness of the shape for intentional use can suggest a new way of thinking about knitted patterns and design innovations for knitted garments. The use of these features also requires the use of different knitting techniques [9-11].

4. Sparsity Modeling Process of Expression Form

4.1. Visual Expression

Point, line and surface are the most basic elements that constitute the visual image. In knitted garment design, these

elements are arranged in different combinations, and at the same time follow the formal beauty rules of contrast and coordination, unity and change, rhythm and rhyme to show different visual effects. These visual effects are not only formal beauty, but also depend on the garment itself, combining color, yarn, organization and silhouette to form a practical sparse shape with visual aesthetics [13].

4.2. Tactile Performance

The diverse woven textures of knitted garments are different from the innovative design features of general fabrics that can only be cut by cutting. Knitted loops can form a rich bump effect on the surface of the woven piece due to the different configuration. The combination of different tissues and yarns makes the visual effect of the pattern chic and three-dimensional, and the feel is rich and varied. For example, the most basic flat knit single-sided fabric will be horizontal rows of loops using different density knitting can form the effect of bumpy horizontal stripes, changing the length of the yarn can also form irregular bumpy bubble effect on its surface. Rowan tissue is a combination of lines with a distinct tactile texture, and with a certain stretch to form a narrowing or exaggerated stripe effect. With the development of loop organization and various knitting processes, irregular tactile effects and innovations can also be formed.

5. The Role of Sparse Modeling Process

Each process will form a special appearance effect, and the sparseness process is different from the other processes in knitted garments, which are mainly functional, and mainly aim at creating new appearance shapes, providing great space for knitted garment pattern design.

5.1. Enriching Knitted Patterns and Styles

In terms of each pattern, it is itself a product of functional and aesthetic balance and unity in design. When applying patterns to the overall design of knitted garments, it is important to consider the overall balance between aesthetics and function. A completely functionalist approach is no longer sufficient to meet people's needs for beauty in this day and age. The basic model of "functionality" is being transformed into a model of "consumerism", which emphasizes the trend of differentiated design. Only through the past flower pattern more single molding method, can no longer meet such market demand. Through the concept of sparse and dense variation, the design of the flower pattern has changed from a more fixed pattern of needle arrangement to a more varied row of stitches. Such a knitting method further enhances the originality of the pattern design [15].

5.2. Improving the Aesthetic Value of Garments

From Milan to New York, from London to Paris, the world's major fashion weeks see the latest developments in knitwear in every season. These garments not only contain the latest styles, embrace a wealth of emotion and creativity, but also reflect the research atmosphere of diversified cultural forms using new technological achievements. The aesthetic value of the garments is also changing with it. Today, the main role of knitted garments has changed from warmth and coldness to beautiful and individual fashion, and the aesthetic tends to be diversified. The previous aesthetic standard of classic and delicate value positioning also began to have a rich texture of multi-level, multi-angle development.

6. Conclusion

The function of knitted clothing has expanded, the aesthetic value of the improvement and diversification has given designers a broader design space. Inheritance and development of traditional technology and the use of modern new technology process, inclusive, diversified development has become possible. This has also expanded the space for the application of the concept of sparse and dense modeling and the study of knitting techniques.

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