

# Hexi Seal Painting of Ming and Qing Dynasties -- Image Segmentation Based on CiteSpace Scientific Knowledge Analyze

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**Abstract:** Hexi seal painting is a form of color painting of ancient Chinese architecture and a symbol of the supreme status and power of the royal family. Hexi seal paintings are mainly painted in the main buildings and temples by court painters in the Ming and Qing Dynasties. They are gorgeous in color and rigorous in structure. This paper makes a visual analysis of the related articles of Hexi seal painting, analyzes the knowledge map of Hexi seal painting in CNKI database from 1979 to 2021, and roughly outlines the development context and frontier of Hexi seal painting research from 1979 to 2021; and based on the cluster analysis of the key words, it is concluded that the study of Chinese Hexi seal painting can be divided into five directions: the Study of Cultural Relic Protection, the study of patterns, the Study of Color, the study of techniques, and the modern application, it is concluded that the Dragon Grass Color Painting is the Research Frontier in Hexi seal painting. There are three main fields in the study of Hexi seal painting in China, they are archaeology, architecture and art. The best way to study Hexi seal painting is inter-discipline and joint research, which promote the protection and development of Hexi seal painting art.

**Keywords:** Hexi Seal Painting, Knowledge Map, Data Visualization, Cultural Relics Protection, Dragon Grass Hexi

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## 1. Introduction

Knowledge of Chinese traditional culture, it helps to enhance national cultural self-confidence. Respecting and protecting cultural relics is very important for us to maintain our country. National unity and safeguarding national and social unity and stability are of great practical significance. It is important to protect all kinds of historical and cultural relics.

The protection of cultural relics is an important part of the in-depth study of China's history and culture and the promotion of the continuous innovation and sustainable development of modern science and information technology. There must be requirements. With the gradual attention of the Chinese people to culture, the important role of the protection of ancient architectural relics has gradually become prominent. Official coloured drawing is the essence and treasure of China's ancient

architectural painting. Its decorative patterns are exquisite, standard and hierarchical, as Ming and Qing Dynasties. As the carrier of feudal architectural hierarchy in the period, it has high aesthetic value and historical research value. Official color paintings in Ming and Qing Dynasties It can be divided into three kinds: Hexi seal painting, xuanzi color painting and Soviet style color painting. Hexi seal painting has the highest hierarchical status, with dragons and phoenixes as its core in the main architectural painting form.

This paper makes a visual analysis of the related articles of Hexi seal painting, analyzes the knowledge map of Hexi seal painting in CNKI database from 1979 to 2021, and roughly outlines the development context and frontier of Hexi seal painting research from 1979 to 2021; and based on the cluster analysis of the key words, it is concluded that

the study of Chinese Hexi seal painting can be divided into five directions: the Study of Cultural Relic Protection, the study of patterns, the Study of Color, the study of techniques, and the modern application, it is concluded that the Dragon Grass Color Painting is the Research Frontier in Hexi seal painting.

There are three main fields in the study of Hexi seal painting in China, they are archaeology, architecture and art, and the best research way is interdisciplinary and joint research. Image analysis based on citespace scientific knowledge is part of fundamental research to promote the conservation and development of Hexi seal painting.

## 2. Concept of Hexi Seal Painting

Hexi seal painting was painted on palaces or royal buildings in the Ming and Qing Dynasties. According to the different contents and practices of Hexi seal painting, it will be combined with the seal painting is divided into gold carved ink and seal, Golden Dragon and seal, dragon and Phoenix and seal, dragon grass and seal, Golden Phoenix and seal and grass Phoenix and seal. Hexi seal painting it is a splendid treasure in Chinese traditional architecture. It has a long history and is one of the historical and cultural heritages of the Ming and Qing Dynasties. Most In order to prevent moisture and insects,

the use of early color painting gives oil color to the exposed wood structure, which has been beautified after later development It has become a unique form of art decoration in China. It reflects the development of culture, politics and economy in the late Qing Dynasty Peaceful aesthetic characteristics.

## 3. Literature Analysis of Hexi Seal Painting

### 3.1. Publish Annual Trends

"The earliest research literature on the Hexi seal painting appeared in 1979, which was the color painting of the Meridian Gate of the Forbidden City published by the Palace Museum "The restoration of." [1] It can be concluded from Figure 1 that from 1979 to 2004, the number of research literature on he seal painting Low and slow growth. From 2005 to 2013, the growth rate of the number of articles fluctuated greatly, and the growth rate of the number of articles from 2013. The fluctuation is small, but the number of documents is still rising, with an annual number of about 10-15. From 2019 to 2021, The number of Hexi seal painting is increasing rapidly. This feature is closely related to the national incentive policy.

### Overall trend analysis

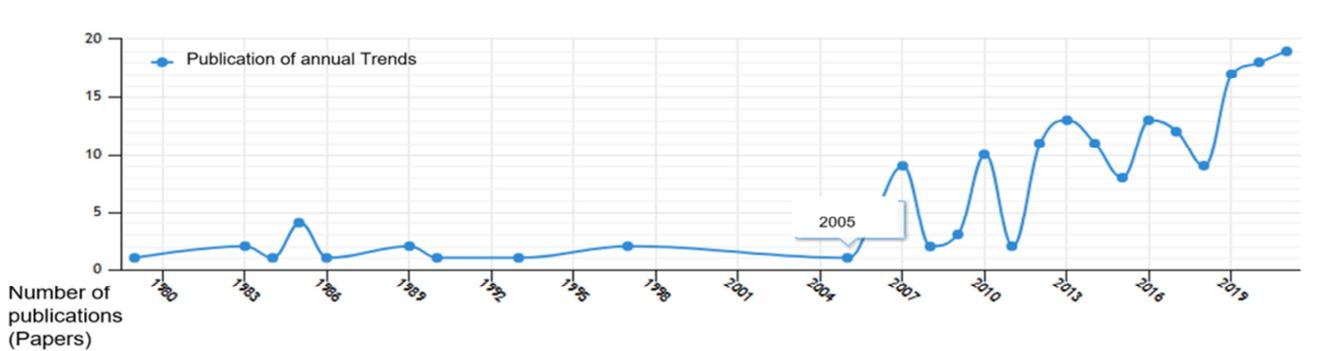


Figure 1. Published annual trend table.

Since 2005, great changes have taken place in the number of literature studies on Hexi seal painting in China, which is in line with the number of literature studies on Hexi seal painting fluctuating rise. "In 2007, China issued instructions on relevant documents of the revision of the law on the protection of cultural relics." [2] Set up a full National top ten and key cultural relics protection units, provincial, municipal and county-level intangible civilization scenic spots. The guidelines and policies promoted 2008. After that, the number of Hexi seal painting documents increased.

In 2019, the number of research documents on Hexi seal painting reached a very high point. The party and the Central Committee attach importance to the protection and management of cultural relics and history Heritage, human

revolutionary cultural relics, international cultural exchanges and cooperation are gradually increasing and gradually moving towards a development situation. The upsurge of visiting ancient buildings is continuing to intensify and heat up, It has become a new fashion to visit or travel in Beijing's ancient buildings during the Chinese New Year (Festival). Chinese traditional festival. More than 40% of visitors visited the Forbidden City, the summer palace, the Old Summer Palace, Prince Gong's residence and other ancient buildings. Chinese people's understanding of Chinese traditional culture. The understanding of architecture and traditional art has gradually deepened, and the patriotism and cultural literacy have increased as a whole, promoting the research and documentation of Hexi seal painting Growth changes.

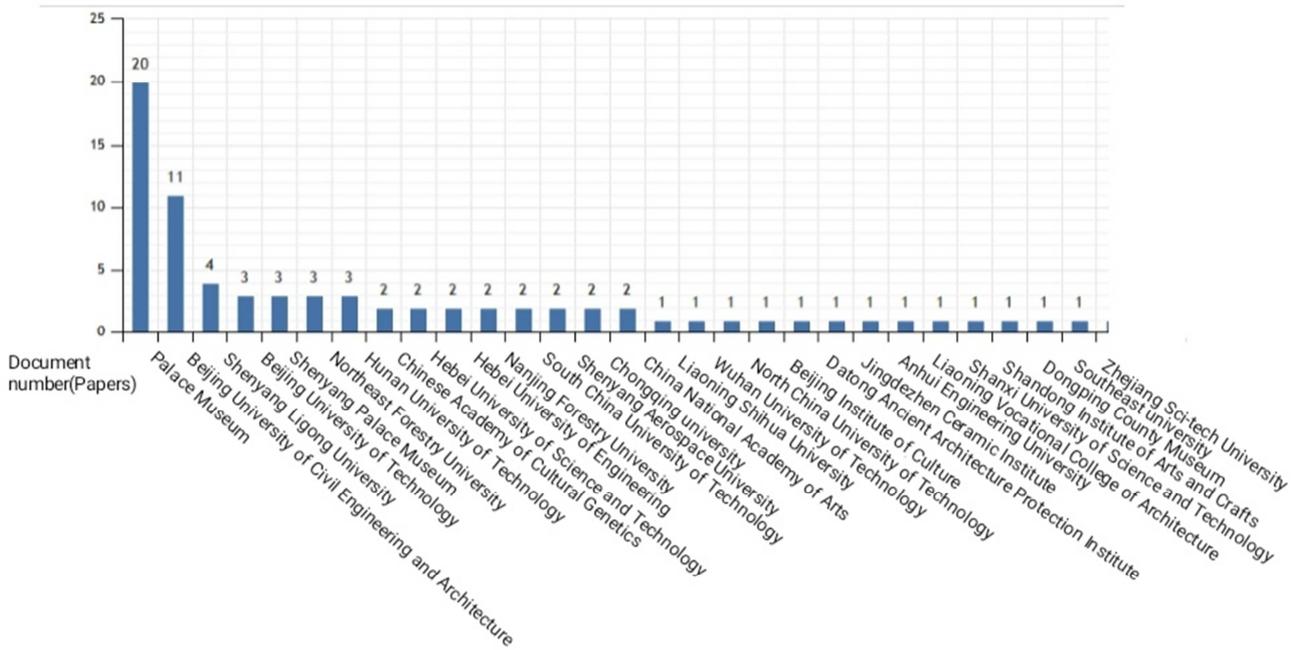


Figure 2. Table of the number (articles) published by research institutions.

### 3.2. Quantitative Analysis of Literature Published by Research Institutions

Through the visual analysis of the literature with Hexi seal painting as the title, the number (articles) published by architectural Hexi seal painting research institutions are obtained (Figure 2). Select the institutions with the largest number of Chinese documents. It can be seen that domestic institutions studying Hexi seal painting is mainly distributed in the Forbidden City. The museum and several colleges and universities with strong comprehensive strength of architectural art, colleges of architecture and art and their architectural research institutions. Palace Museum The Institute ranks first in the number of documents published, with a maximum of 20 documents. "Due to historical reasons and regional origin in Beijing and Shenyang. Because it is close to ancient buildings and temples," [3] Therefore,

scholars in these two cities have done more research on he xi seal painting and architectural color painting.

### 3.3. Keyword Analysis of Hexi Seal Painting

#### 3.3.1. Key Words

Using the keyword co-occurrence map of CiteSpace for visual data analysis, Intuitively get the information related to the study of Hexi seal painting. The main key words are shown in Figure 3. The height and size of each circle in the figure represent the frequency of keyword words, and The size of the central value and the same line between nodes can be used to illustrate the degree of cross connection between different keywords, density and The degree of association. According to the keyword clustering, it can be concluded that Hexi seal painting, architectural color painting, dragon grass HeXi were in the Ming and Qing Dynasties. Hexi seal painting plays an important role and position in the research.

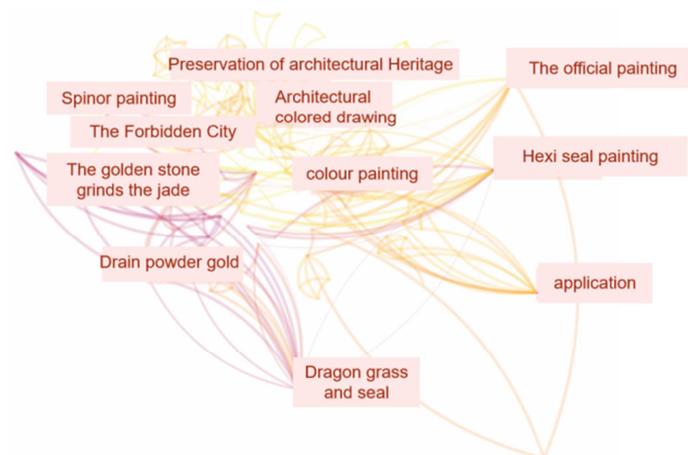


Figure 3. Main keywords.

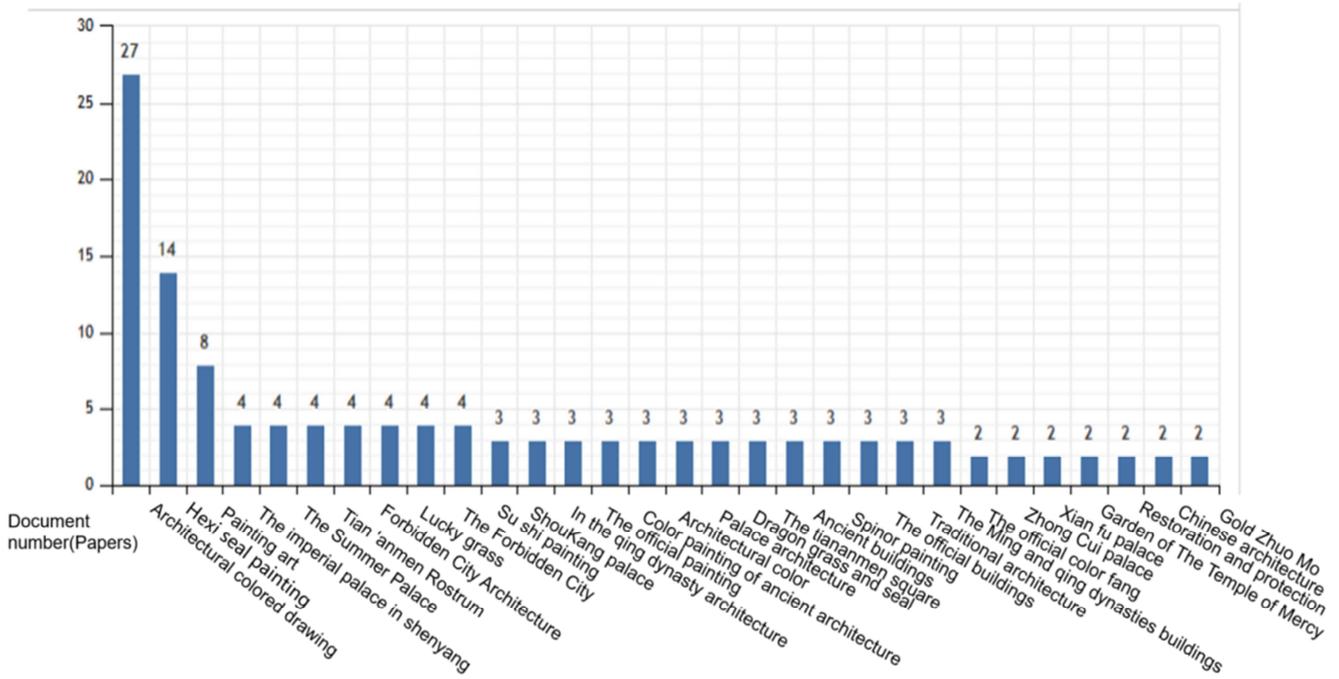


Figure 4. Distribution of main topics.

3.3.2. Distribution of Main Topics

It can be seen from the research on the distribution of cultural relics in China (4) that the color picture occupies the main research direction of cultural relics protection in China. The status of. According to the illustration, the number of articles published in the direction of architectural color painting is 27, accounting for 23% of all the articles searched this time, which became the focus of the Ming and Qing Dynasties. Major disciplines in the field of color painting

research. The node type selects the subject words and keywords to get the main research direction of Hexi seal painting focuses on architectural and decorative color paintings, Hexi seal painting, decorative color paintings of the Qing Dynasty, Shenyang Forbidden City, etc. From the perspective of theme distribution, research The research direction is mainly the in-depth study of ancient Chinese color painting itself and details, It has greatly promoted the protection and restoration of China's cultural relics The development of archaeology.



Figure 5. Author's Atlas.

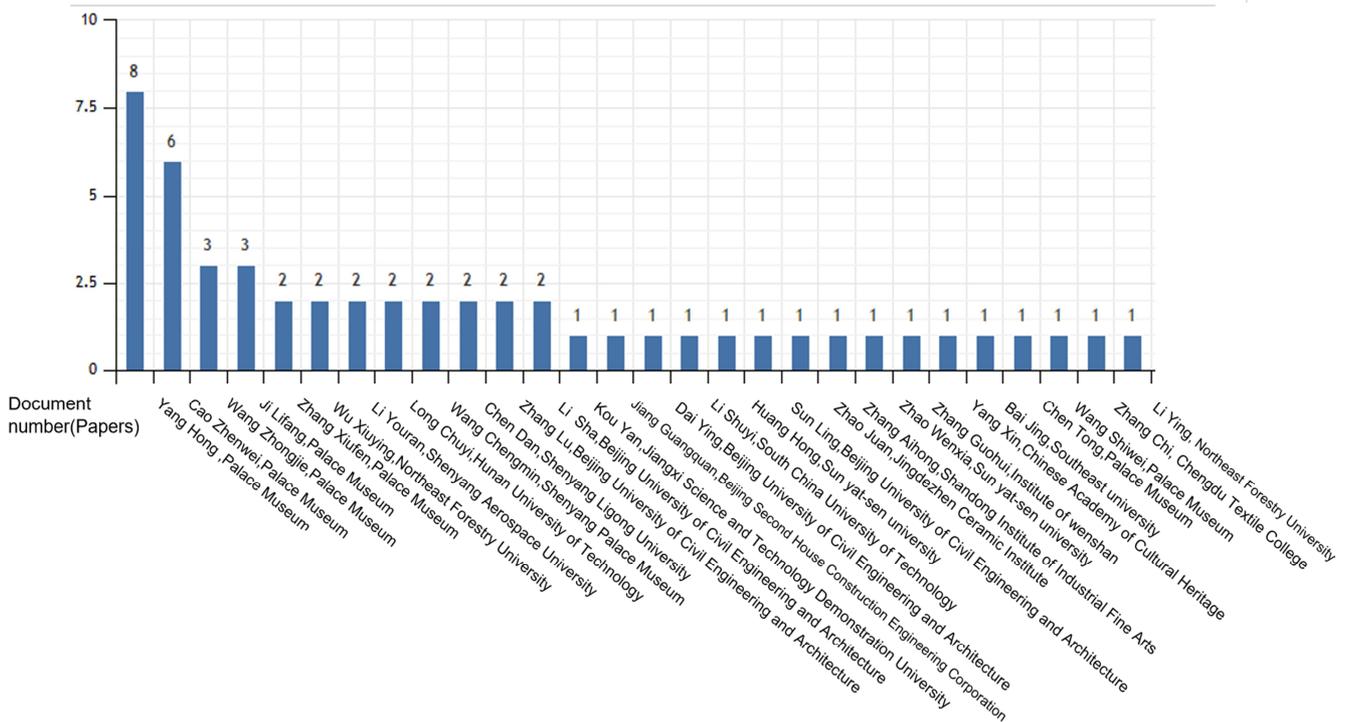


Figure 6. Distribution of Chinese Authors.

### 3.3.3. Author and Research Content Analysis

As for the author's Atlas (Figure 5), there are many scholars studying Hexi seal painting in China at present, and the distribution map of Chinese authors (Figure 6) is the same. The top three authors with the largest number of papers were Professor Yang Hong (8), Professor Wang Zhongjie (6) and Professor Cao Zhenwei (3). They are undoubtedly the most influential scholars in the research field of Hexi seal painting. From the perspective of collinear relationship among authors, it shows "great dispersion. The distribution characteristics of "small aggregation" have formed a large-scale academic research group, but they are relatively scattered. Relatively concentrated author group. There is an academic team with Professor Li Sha of Beijing Architecture University as the core and a research team composed of Yang Hong experts of the Palace Museum. As can be seen from the frequency of citations, the articles published in the Journal of the Palace Museum are more in-depth in the study of Hexi seal painting, which are of great significance to researchers. With great inspiration. Researchers at the National Palace Museum have made a more in-depth study of Hexi seal painting, and made a detailed study from many aspects. Research has been downloaded and cited very frequently.

Professor Yang Hong has made outstanding academic achievements in the architectural art of official decorative color painting in the Ming Dynasty, Studied more than 20 differences Official painted buildings with the same decorative style and architectural type. "For most of the

wooden structures in the Ming Dynasty in the Forbidden City of Beijing, Liang Fang painted and painted in oil Lacquer painting is divided into two development stages: early (Yongle Nanming Hongguang Shunzhi) and late (Zhengde Chongzhang). perfect. This paper studies the overall structure of color painting art in the Ming Dynasty." [4].

Professor Wang Zhongjie's research has three aspects: the existing color paintings in the palaces of the Forbidden City, the dating of color paintings and the evolution of color paintings Dimension hierarchy." [5] Combine the implication, symbols and expression methods of the patterns in Hexi seal painting with the preferences of the Ming and Qing Dynasties, Explore the influence of the change of the ruler's religious belief on the color painting, and the application of Taoist connotation in Hexi seal painting. For eaves and The different levels of the outer eaves are recorded in detail.

Professor Cao Zhenwei explored the architecture of the Forbidden City and its affiliated halls, as well as the beam frames, color paintings, oil decorations and large wooden frames of the affiliated buildings. The combination law, the drawing method of pattern and the specific application of pattern in the position of a part are described in detail to explore the color. The application of painting in modern times and its position. "Professor Cao Zhenwei used typological research methods to extract three groups of 12 The production method of Hexi seal painting in different shapes reveals the development and evolution of Chinese color painting art in history and time in the Ming and Qing Dynasties Collaterals." [6].

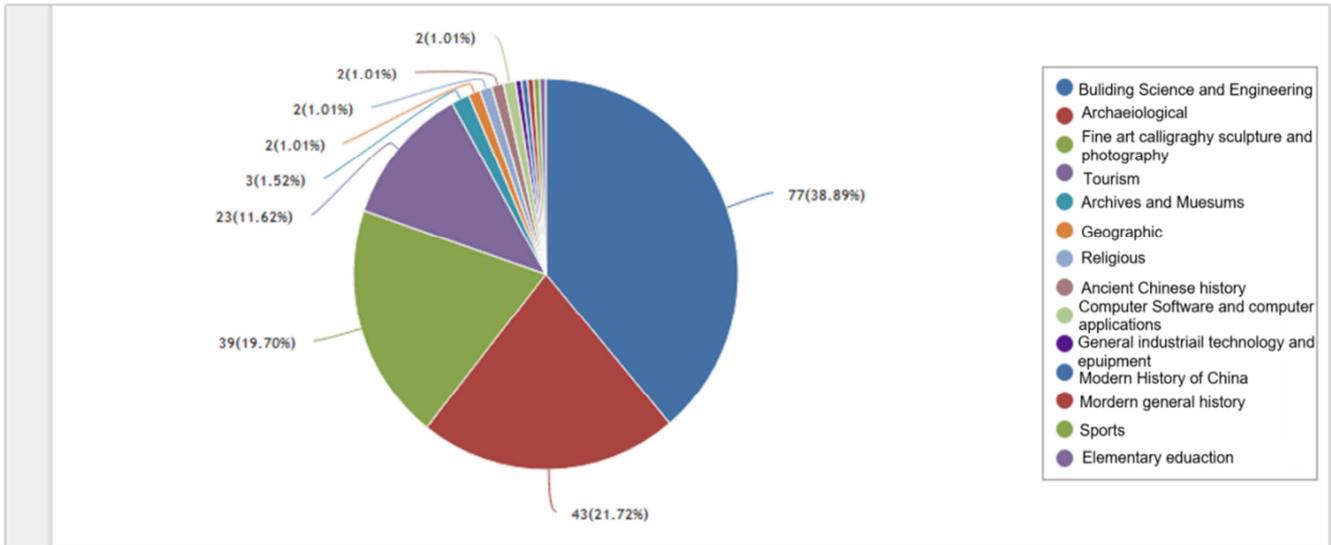


Figure 7. Discipline Distribution.

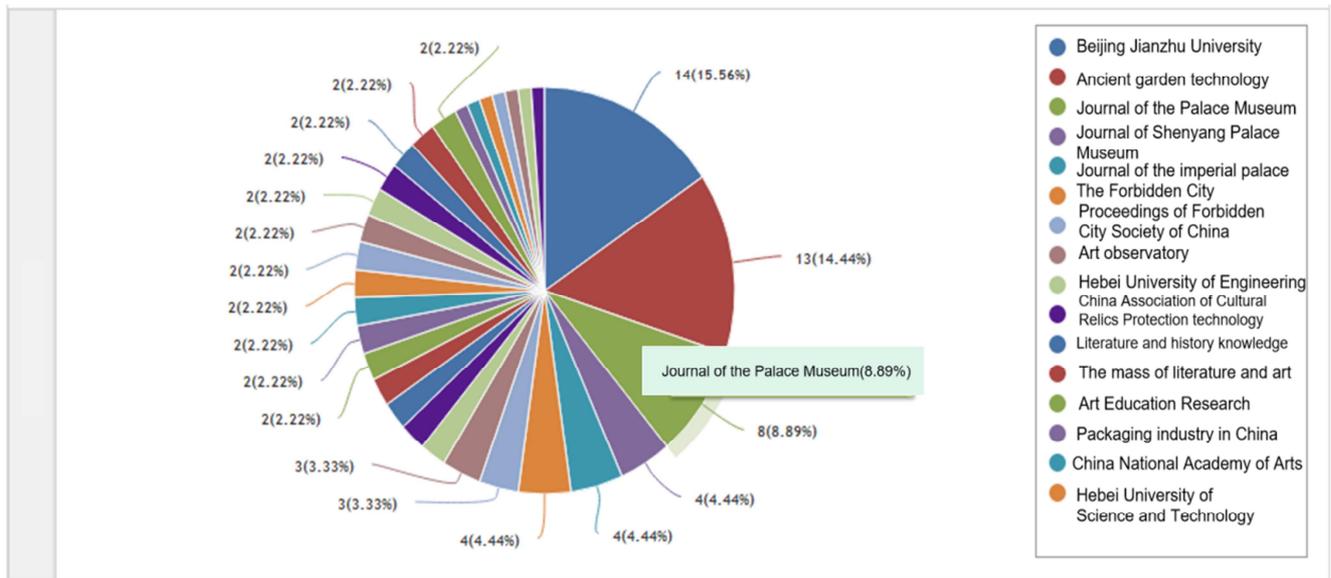


Figure 8. Distribution of literature sources.

3.3.4. Discipline Distribution and Literature Source

The journals with the largest number of maps in the research field of Hexi seal painting in China are generally classified into three discipline types: architecture, archaeology and art, said It is clear that the current research on Hexi seal painting is mainly based on these three university disciplines. According to the discipline distribution map (Figure 7), we can get the information about and The research on seal painting is mostly published in books and magazines of architecture, archaeology and art. As shown in Figure 8, the research field of He Xi color painting 38.89% of the disciplines are in the field of

Architectural Science and engineering, 21.72% are in the field of archaeology. Main research fields of Hexi seal painting. It is the direction related to architectural science, engineering and art. Hexi seal painting was originally painted by skilled craftsmen in the Imperial Palace in the Ming and Qing Dynasties, belonging to the art category, now presents the trend of multi-disciplinary joint research. "If Archaeology and architectural art jointly study the peace seal. The protection and application of colored paintings in today's development is bound to play a better role in promoting the protection of Hexi seal painting." [7].

Top 1 Keywords with the Strongest Citation Bursts



Figure 9. Diagram of mutated words.

### 3.4. Analysis of Mutated Words

CiteSpace software finds that Longcao and Hexi are the only mutated words by counting the mutated words from 1979 to 2021. "Dragon grass and seal consists of a vermilion square heart with large amount, a small square heart with auspicious grass pattern of treasure beads, a front dragon box and a small square heart with two dragons playing with pearls and so on." [8] The contents of the early stage and the later stage of the study of dragon grass and seal are different, with less relevance, and the early stage is detailed and conceptual. In the later stage, more attention was paid to the pattern research of dragon grass and seal, cultural relics protection, modern application and so on. 1985 China and The United Cultural Organization has established a harmonious and common development relationship in the field of world heritage, so as to promote the research on color painting, which has attracted much attention study on the research and protection of dragon grass Hexi and Hexi seal painting.

## 4. Development Stage of Combining Research and Repair Design After 1979

"After the reform and opening up, there have been new changes in the way of thinking of the Chinese people. In 1971, the ancient construction office of the Forbidden City in Beijing was restored The planning staff also developed new methods and new ideas for the research of Hexi seal painting, and closely combined the research of Hexi seal painting with the restoration design. Therefore, it has affected the research and protection of today's color paintings." [9].

After 1979, it was carried out around the teaching topics of professors in Colleges and universities. Their research played a theoretical role in the protection of ancient buildings in the Forbidden City On supporting function. There are extremely valuable historical relics and a considerable number of precious relics in the Forbidden City, which are specially designed by the color painting research center. Staff carry out color painting research and protection to promote the effective implementation of new scientific ideas of color painting. In 1982, the law on the protection of cultural relics was promulgated. "The legal system for the protection of cultural relics has become increasingly sound, and the concept of world heritage protection has been gradually strengthened. It has been popularized and accepted by all sectors of society, from the relatively involutive and relatively closed "concept of cultural relics protection" to a deeper and more profound concept. The concept of 'cultural heritage protection' is broad." [10].

## 5. Summary and Thinking

In this paper, CiteSpace software is used for data visualization, and the main characteristics of Hexi seal

painting research field are summarized. In the form of spectrum, this paper systematically summarizes its research topics, research contents, number of citations, focus hotspots and researchers. Through Over depiction 1979 The knowledge map of the study of Hexi seal painting in 2021 can roughly outline the development of color painting research in China from 1979 to now. From the literature statistics, Hexi seal painting includes many levels, and its related research fields also include more detailed and extensive contents. The study found that Chinese researchers have more research on the patterns of color paintings, mainly regional and local research. Domestic research and seal.

Color painting is relatively late, only forming a local cooperation network in local areas, without extensive and interdisciplinary research cooperation. The research of Hexi seal painting in China mainly depends on the fields of architecture, archaeology and art. "Domestic research on Hexi seal painting pay more attention to field empirical investigation and research, and conduct accurate field investigation. To carry out a campaign aimed at the protection of Hexi seal painting. The research, theoretical system and scientific research support system related to planning and restoration methods have not been fully established." [11] That's enough It is proved that the research field of Hexi seal painting has broad prospects and development space.

The protection and research field of Hexi seal painting has attracted the attention of the state and the government in recent 40 years. The state invests a lot of money every year.

Financial resources and energy are in the field of ancient cultural relics protection. The basic research core of the subject of "Hexi seal painting in the Ming and Qing Dynasties" is about harmony research and record of the historical stages of seal painting. "China's imperial seal painting literature is mainly about specific areas, such as the Forbidden City and the summer palace And Prince Gong's mansion and other ancient buildings are analyzed, so as to study the development of Hexi seal painting in specific areas process, background and protective measures." [12] The research method in this field must be interdisciplinary cooperation and joint commitment to Hexi Exploration of research methods of color painting protection. Through the latest technical means, traditional process techniques, material theory and experience, historical theory, architecture, archaeology and aesthetics provide effective data support and empirical basis for the design practice of Hexi seal painting.

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