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On Writing the Abstract of Scientific and Technological Papers

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Abstract
Abstract is one of the most important parts of a scientific and technological paper, and also a high degree of generalization and concentration of a scientific and technological paper. Abstract plays a key role in whether a paper can be accepted by journals, cited or read by readers or not. At the same time, the proper writing of English abstract is also conducive to the paper and exchange of scientific research results. Therefore, authors of papers should follow the writing norms of English abstract, but some authors have some shortcomings in English abstract writing. This paper analyzes the types of English abstracts of scientific and technological papers, the contents that should be included in the abstracts, the writing skills such as tense voice and the principle of choosing key words, so as to avoid more mistakes in structure, tense and voice and improve the quality of the papers.

Key words: Writing; Abstract types; Structure; Keywords

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INTRODUCTION
Scientific and technological papers are records of scientific and technological researchers' research achievements. Abstract plays an important role in the publication and dissemination of papers. Abstract is an essential part of the paper, it is, on the one hand, supplements the deficiency of the title, on the other hand, the full text of the miniature, and expands the international exchange, convenient peer search around the world refer to. Abstract in English plays an important role in the international communication of journals. This paper discusses the content, types, writing skills, common sentence patterns and expressions in English abstracts and the writing of key words.

1. TYPES OF ABSTRACTS
Abstract is a summary of the paper, a brief summary of the parts of the paper (introduction, materials, methods, results, and discussion) (Robert A. Day & Barbara Gastel, 2006, p.52). Abstract of science and technology paper is an important part of the paper. Abstract should allow readers to obtain the necessary information without reading the full text quickly and clearly, so as to determine whether readers are interested in the paper and whether to read the full text. An abstract is usually a paragraph of about 250 words. Its content is usually divided into four aspects: current problems and research objectives; the main contents of the study and the methods adopted (experimental design and methods); research results and the main conclusions of the research work. Abstracts usually use the present simple or past simple tense. The abstract should not mention the content not involved in the study, no references, no tables and so on. The abstract is a complete short essay written in the third person, concise and accurate description of the important content of the paper. Because it is a secondary document, it should be independent and self-explanatory, and has the same amount of main information as the primary document. The abstract of scientific and technical papers are usually divided into two types: indicative abstract and informative abstract. The following two categories of abstracts are explained respectively.

1.1 Indicative Abstract

Descriptive abstract, also known as descriptive abstract, mainly introduces briefly the issues and arguments involved in a paper. It is also called topic abstracts. Regardless of the length of the paper itself, an illustrative abstract generally summarizes the topic of the paper in only two or three sentences, and does not involve conclusions and arguments. It is mostly used for reviews, conference reports, etc.

To provide an overview of the main information in a paper, rather than outlining the methods, results, and conclusions of the study, there are mostly a few simple sentences, usually about 100 words in the abstract. The following abstract examples are from the journals of *International Journal of Electrical Power & Energy Systems* (2013), the title of the paper is "Analysis of Transient Electric Field Distribution inside the Large Generator under Strong Surge Voltage". *IEEE Transactions on Power Delivery* (1991, volume 6, by M. A. Redfern), the title of the paper is "A Personal Computer Based System for the Laboratory Evaluation of High Performance Power System Protection Relays". *Electric Power Systems Research* (2015, volume 119, by Julio Cesar Rosas-Caro, the title of the paper is "DC-DC Multiplier Boost Converter with Resonant Switching".

Eg.1

In the large hydropower station, the large generators will be suffered from the electrical damage under the powerful surge voltage, and they may be easily also stricken by some surge voltage from the power transmission lines at any time, in which the hazard of transient over-voltage is more serious to the internal electrical insulation of the large generator. Therefore, it is very necessary to analyze the transient electric field distribution for protecting the electrical insulation inside the large generators. In the paper, the analysis of transient electric field distribution inside the large generator under strong surge voltage is presented, in which a field-circuit calculation method is approached, and the transient electric field distribution inside the large generator is fully analyzed by the hybrid analysis method.

The abstract above has three sentences, the first sentence is about the situation of the generators--"the large generators will be suffered from the electrical damage…; be easily also stricken by some surge voltage". The second sentence is the analysis of necessity--"it is very necessary to analyze the transient electric field distribution for protecting the electrical insulation inside the large generators". The last sentence is what to do--"the analysis of transient electric field distribution … is presented; the transient electric field distribution inside the large generator is fully analyzed". From the analysis above, we can see that a general description of the study is given without the four steps of the research.

Eg. 2

The power system simulation system described in this paper provides a relay under evaluation with current and voltage inputs similar to those that it would encounter under service and fault conditions. Using digital transient simulation programmes to the behavior of model power system, the facility provides an effective bandwidth of from dc to 4 kHz for both the current and voltage relay inputs. The relay's outputs are automatically monitored during the test, enabling a detailed report of its response to be produced. The application of the system is illustrated by the evaluation of a new EHV Teed feeder relaying system.

There are 98 words in the abstract. The first sentence -- "The power system simulation system … in this paper provides a relay" -- shows us what to do in the research, and the other two sentences--"the facility provides an effective…, the relay's outputs are automatically monitor"-- are the specific explanation. The last sentence –"the application of the system is illustrated…"-- tells us its application.

Eg.3

This paper proposes an improved Multilevel Boost Converter, also known as Multiplier Boost Converter, in which the spike-type current among capacitors is eliminated through one resonant inductor, achieving some resonant-type current waveforms. Experimental results demonstrate the applicability of the proposition.

This 40-word abstract is a two-sentence summary of the proposed Multilevel Boost Converter and the experimental results.

1.2 Informative Abstract

The characteristic of informative abstract is to summarize the purpose, method, main data and conclusion of the paper comprehensively and briefly. The abstract should be brief and strive to provide a detailed explanation of the scientific investigation. It should include the purpose and rationale of the research; the basic methods of the study and the results and conclusions (Martha Davis, 2004, p. 113).

Informative abstract generally involves the purpose, method, result and conclusion of the paper and it is the concentration of the paper. The informative abstract generally has 150-300 words. The next two examples below are from the paper by Noraliza Hamzah et al "A New Approach to Locate the Voltage SAG, Electric Power Systems Research, Source Using Real Current Component" (Volume 119, February 2015). "Method Based on Independent Component Analysis for Harmonic Extraction from Power System Signals" by Danton D. Ferreira et al in the journal "*Electric Power Systems Research"* (2004,vol. 2, pp. 113-123; 2015,vol.119, pp.19-24).

Eg.1

Voltage sag can cause hours of downtime, substantial loss of product and also can attribute to malfunctions, instabilities and shorter lifetime of the load. Accurate voltage sag source location can help to minimize the loss and problems caused by voltage sag in a power distribution system. This paper proposes a new method to locate the source of voltage sag in a power distribution system. The proposed method uses the polarity of the real current component to determine the sag location relative to the monitoring point. The product of the RMS current and the power factor angle at the monitoring point is employed for the sag source location. A graph of this product against time is plotted. The voltage sag source location is determined by examining the polarity of the RMS current at the beginning of the sag. The proposed method has been verified by simulations and the results are proven to be in agreement when compared with the slope of system trajectory method.

Firstly, the harm of voltage drop is explained in the abstract, and the method of precise voltage sag source location can reduce the above problems. This paper proposes a new method to solve this problem: "Voltage sag can cause hours of downtime…; Accurate voltage sag source location can help to minimize the loss…; This paper proposes a new method to locate…". Secondly, four sentences are used to explain the methods in detail: "The proposed method uses the polarity of the real current…; The product of the RMS current…is employed; A graph of this product against time is plotted; The voltage sag source location is determined by examining". At the end of the abstract, the proposed method verified and the results are mentioned.

Sometimes due to the limitation of length or research content, the content of the abstract may not completely mention the four elements, but the most important thing is to clarify the research results.

Eg. 2

This paper presents a new application of independent component analysis for harmonic component extraction from power system signals (voltage and current). The harmonics to be extracted can be time varying and the method does not require synchronous sampling, which means it is able to work in off-nominal frequency. The proposed method has shown to be simple in the operational stage. The method is tested using both simulated and real signals, and performance was evaluated using measures in both frequency and time domains. Results are compared with another method available in the literature.

This abstract includes four aspects: the research purpose: "This paper presents a new application…"; the research content: "The harmonics to be extracted can be time"; the research result: "The proposed method has shown to be simple and the conclusion: method was tested … and performance was evaluated, Results were compared…". Whether the abstract is complete or concise, the focus of the abstract writing must be on the introduction of the research results, and the reader can have a deeper understanding of the research process and significance.

2. WRITING TECHNIQUES OF ABSTRACT

A good abstract can make readers understand the basic content of a document quickly, grasp the relationship with the reader's research topic accurately, so as to decide whether to read the full text. The content of the paper should be expressed concisely and clearly, the scope and main object of the research is stated, the methods used is described; the results are summarized and the main conclusions is stated. The abstract should not contain commonsense content in the field, nor should there be any new content that does not exist in the text. Generally, the research work should not be commented and prospected, and the first sentence of the abstract should avoid repetition with the title. The figure, table and formula should not appear in the abstract to facilitate the retrieval system input. The level of the abstract determines the reading frequency of the paper. Especially in the age of information network, abstract plays an important role in increasing retrieval, attracting readers and increasing citation frequency.

2.1 General Skills of Abstract Writing

The use of syntax, vocabulary and tense is particularly important when writing an abstract of an English paper. The sentences in the abstract of science and technology should be subject and predicate agreement first. Second, the simple present tense or simple past tense is often used. In addition, non-predicate verb forms are used to achieve the purpose of concise language expression. Voice is also an important aspect of writing English papers. In fact, a large number of scientific papers in English use the passive voice. In terms of the use of words, adjectives and adverbs should be used carefully. Modifiers such as "very, much and rather" should not be used in the abstract.

The person and number of the subject must be consistent with the verb in the abstract of scientific English papers. The key of this grammatical phenomenon is to make a correct judgment on the number of subjects and determine the form of predicate verbs based on this. When the subject contains the coordinating conjunction, we should distinguish between a single subject and a coordinated subject. If the subject is single, the verb should be singular, if the subject is plural, the verb should be plural.

Eg.1

A daily income and outgo from sold or purchased power is also added.

The words "income" and "outgo" are connected by the word "and", but it is a single subject, so the verb should

be “is added”. Collective nouns have some meaning only in the context of the whole combination, then the verb is singular and the collective noun is preceded by article “the”. If the collective noun refers to a collection of individuals, the verb should be plural, and the collective noun uses the article “A”. Common collective nouns we often come across are contents, majority, range, couple, number, series, dozen, pair, variety, group.

Eg.2

The series is arranged in order of decreasing size.

The word “series” belongs to a collective noun, the article “the” should be used before it, and the verb should be “be”, that is “is arranged”. The words in the abstract are limited, and the sentences should be concise, clear and accurate. Some redundant words can be omitted and complex sentence structure can be simplified. Words can take the place of phrases, phrases instead of sentences.

Eg.3

The Micro Grid considered in this paper consists of a wind turbine, a micro turbine, a diesel generator, a photovoltaic array, a fuel cell, and a battery storage.

The past participle phrase “considered in this paper” is used to take the place of the clause “which is considered in this paper”. In order to express succinct and clear, the sentences in the abstract often use the past participle as attributive instead of passive attributive clauses.

Eg.4

The electrical power supplied by the photovoltaic (PV) array depends on insolation, temperature and load.

The past participle “supplied” is used as attributive to modify the subject “the electrical power”. In order to avoid semantic ambiguity caused by long sentences, short and simple sentences are used as much as possible.

Eg.5

Finally, the properties of the load-shedding algorithm are evaluated by carrying out an experimental study on the standard IEEE 30 bus system.

The whole sentence is a simple one for the prepositional phrase “by carrying out an experimental… ”is used. The coherence between sentences also needs attention in abstract writing, because the logical relationship between English sentences depends on the corresponding conjunctions.

Eg.6

The HGABF approach can be derived by integrating BF algorithm and genetic algorithm (GA), so that the BF’s drawback can be treated before employing it to solve the complex and high dimensioned search space of the DED problem.

The conjunction “so that” in the example 6 makes the sentence tighter and more coherent. Non-determinative verbs are often used in abstracts. Non-predicate verbs mainly include participles, gerunds and infinitives, which make sentences concise and compact.

Eg.7

Hence, proposing an effective solution method for this optimization problem is of great interest.

Eg.8

To form a more promising convergence sequence and to refrain from the occurrence of unfeasible solutions, GA operators are redesigned according to the specific characteristics of the problem to be solved.

The present participle phrase “… proposing an effective solution method …” is used as the subject of the sentence in example 7 and in example 8, the two infinitive phrases “to form a more promising convergence sequence, to refrain from the occurrence of unfeasible solutions” are used as adverbials.

2.2 Tenses in Abstract Writing

The simple present and simple past tenses are introduced frequently in English abstracts, but the present perfect and past perfect tenses are seldom adopted. Progressive tenses and other tenses are rarely used. English tenses are also used concisely, often in the present simple tense. The present simple tense is adopted to describe the purpose, content, results and conclusions of the research in the abstract. The present simple tense can appear in the abstract to express accepted facts, laws of nature, eternal truths, etc.

Eg.1

This paper presents a generalization of the ABC compensation theory based on mathematical optimization which integrates the neutral losses into the optimization model.

Eg.2

Four different compensation objectives are studied: invariant instantaneous power, constant power, unity power factor, and pure sinusoidal current.

Eg.3

The main contribution of this paper is the generalization of the ABC theory considering conflictive objectives which include among them the minimization of the network losses.

The predicate verbs in the examples above are the present tense: “present, are studied, include”. Generally, the simple past tense is used to describe a discovery, a process of research (experiment, observation, investigation, etc.) at a time in the past.

Eg.4

To validate the proposed technique, a prototype of a FC power converter (a 600-W two-phase interleaved boost DC–DC converter) was constructed in the laboratory, and the control algorithm was implemented to control the prototype using ad SPACE 1104 controller card.

Eg.5

Universal Mobile Telecommunication System (UMTS), the 3G standard for mobile communication networks, was developed to provide high speed data transmission with reliable service performance for mobile users.

The verbs "was constructed" and "was developed" are past tenses to describe something happen in the past. In English abstracts, the present perfect tense is rarely used. It usually links things that happened or have been done in the past with the present.

Eg.6

Studying these unwanted events and making solid predictions about the outcomes of the interruptions has been an attractive area of interest for the researchers for the last couple of decades.

In the example above, the present perfect tense "has been" shows that the action happened in the past, but has an effect on the present.

2.3 The Person and Voice in Abstract Writing

From the perspective of grammar, the person, tense, voice and sentence pattern of the abstract have the following characteristics: The English abstract of the paper should be expressed in the third person. On the one hand, the abstract belongs to the paper, which is a short statement without notes and comments. If it is written in the first person, it will give readers the feeling of self-introduction and comments, which is not in line with the nature of the abstract. On the other hand, an English abstract may appear as a second document in a searchable journal, making it a separate article from the original. Therefore, it is necessary to use the third person, not "We" or "I", but "the authors", "the author", "the paper" (Zhao, 2001). Active voice or passive voice can be used according to the specific situation of the sentence and the content to be expressed.

Eg.1

The classical ABC theory is shown to be a particular case of the presented generalized compensation approach.

Eg.2

In addition, the proposed compensation strategy optimizes the line currents and therefore minimizes the network losses.

Eg.3

Through these four cases, the flexibility and simplicity of implementation of this approach is demonstrated.

In the examples above, the subjects of the sentences are "the classical ABC theory, the proposed compensation strategy, the flexibility, simplicity of implementation of this approach" without using "I, We". Whether to use the active voice or the passive voice in the abstract depends on the need of expression. Active voice is more and more widely used in abstracts, because active voice makes words more clear, concise and powerful.

Eg.4

These results show the effectiveness and the superiority of the introduced method over other published methods.

Eg.5

The original bacterial foraging (BF) optimization algorithm suffers from poor convergence characteristics for larger constrained problems.

Scientific papers are mainly to explain the facts, not focus on the finisher. There is no need to tell who did it. However, in the indicative abstract, the passive voice should be used to emphasize the receiver of the action.

Eg.6

The results of HGABF approach are compared with those obtained by other published methods employing same test systems.

Eg.7

To illustrate the effectiveness of the HGABF approach, several test systems with different numbers of generating units are used.

Eg.8

To overcome this drawback, a hybrid genetic algorithm and bacterial foraging (HGABF) approach is presented in this paper to solve the dynamic economic dispatch problem considering valve-point effects, ramp-rate limits and transmission losses.

In the examples above, the passive voices "are compared, are used, is presented" are used.

2.4 Cohesion and Coherence of Sentences

In order to make the sentence cohesive and coherent, that is, to pass naturally from one sentence to another, the abstract often needs to use cohesive conjunctions or adverbs to indicate narrative sequence, supplementary explanation, result and contrast.

Eg.1

It is a critical problem to check whether the SE results are credible enough to be used for online decision making or close-loop control. However, there are few published works focus on this topic till now.

Eg.2

The electrical power supplied by the photovoltaic (PV) array depends on insolation, temperature and load. On the other hand, the actual power produced by the PV array is not fully transferred to the load. Therefore, it is necessary to extract maximum power from PV array.

In example 1, the sentences are linked by the adverb "however". In the second example, the preposition phrase "on the other hand" connects the first sentence with the second one. Therefore, the second sentence and the third sentence can be compared and contrasted.

3. WRITING OF KEY WORDS

Keywords and abstract do not belong to the text of the paper and keywords are generally located after the abstract. Keywords are the most important words or phrases in the main content of the paper, which is the concentration of the abstract content. Keywords can be derived from the title, abstract, subtitle, conclusion and full text of the paper. Keywords are the essence of the paper, so the principle of choosing keywords is: keywords cannot be completely derived from the title of the paper;

keywords cannot be repeated; they cannot be words outside the paper, but should exist in the paper.

3.1 Function of Keywords and Selection Criteria

Keywords are an important part of electric power science and technology papers and play a key role in the paper. They can explain the problem most, represent the content characteristic of the paper and are the most meaningful words. With the help of the abstract, readers can get scientific research information more accurately, quickly, scientifically and comprehensively (Ma & Huang, 1999). Keywords come from the key words used in the original literature, which can describe the topic concept and do not carry out standardized processing, so as to provide retrieval channels.

Keywords are the indexing for the retrieval of the paper, that is, the retrieval mark given to a document. The correct selection of keywords is helpful to improve retrieval efficiency. Reasonable selection of keywords will facilitate the paper to be searched and cited. Through the logical combination of keywords can clearly prompt the topic content of the paper. In addition, keywords should have independent retrieval meaning, because keywords themselves should have retrieval function, so words without retrieval meaning are not regarded as keywords. Keywords should reflect new concepts such as new disciplines, new theories, new technologies and new materials.

Keywords can be chosen from three levels: ordinary keywords; transitional keywords and specific keywords. Ordinary keywords are useful for describing the field or type of paper, such as simulation, model, recognition, etc., but they are less useful for precise selection of papers and do not help to put the paper at the top of the list of papers searched by readers. Transitional keywords are useful in paper screening and often related to methods shared by several research areas or to larger sub-subject areas. Specific keywords are extremely useful for potential readers to screen papers accurately. To ensure that the title of the paper containing multiple levels of keywords, usually, 1-2 ordinary keywords and transitional keywords, 2-4 specific keywords are selected.

Keywords are mostly nouns or noun-centered nominal phrases composed of verbs, adjectives and nouns. Keywords have specificity, that is, a word or phrase can only represent a concept. Keywords are concise, that is, they are usually professional terms, should be concise and refined after repeated deliberation of words or phrase. Keywords are selected from the title, abstract and text of the paper to reveal the subject content, and selection of the composition. The author should carefully study the title, abstract, body content, etc., refine the concept of the topic, and choose words that can accurately express the topic of the paper. Keywords are not all from the topic, the common keyword sources are: paper title, paper subtitle, conclusions and the full text. Keywords are usually 3-8. Too many keywords will lead to labeling abuse, and too few keywords can hardly express the topic of the paper.

3.2 Procedure of Keywords Reference

After the completion of a paper, the author should carefully read the full text, analyzes the theme accurately, objectively and truthfully. The author should correctly understand and judge the main content and key points of the paper by browsing the title, abstract and text, and grasp the innovative views and the most valuable methods and results through analysis and judgment and primary keywords. Keywords should include the following ones: 1) Words that can reflect the main content of the paper. 2) The name of the research results of the paper or the name of the general category of several results in the paper. 3) The specific name of the scientific research method used to obtain the above results or conclusions, and the name of the thing or substance that the literature is the main research object. 4) Nouns that appear in the title that the author considers important or list other keywords that the author considers useful for retrieval and literature utilization (Zhou, 2013, p.136). Keywords are cited in descending order of "criticality". Generally speaking, keywords that reflect the research purpose, object, scope, method and process of the paper are quoted first, followed by keywords that reveal the research results, significance and value.

The following examples are derived from papers published in *Electric Power Systems Research*, (Volume 119, pp1-10, 2015) : "Applying a Wide-area Measurement System to Validate the Dynamic Model of a Part of European Power System, Simulation". Authors are Damijan Kopse et al.; *Electric Power Systems Research* (November 11, pp. 1989-1996, 2008): "A Summary of Demand Response in Electricity Markets". The authors are M.H. Albadi and E.F. El-Saadany.

Eg.1

Keywords: Power system; Dynamic model; Simulation; Stability; WAMS; Model validation

The first and second keywords in example1 is from the title of the following paper: "Applying a wide-area measurement system to validate the dynamic model of a part of European power system，Simulation". The keyword "WAMS" is from the abstract of the paper, "Stability" and "Model validation" are selected from the main body of the paper.

Eg.2

Keywords: Demand response; Price elasticity; Real time pricing; Electricity markets

There are keywords in example 2 and "Demand response" and "Electricity markets" are from the title of the paper: "A summary of demand response in electricity markets". Another two keywords "Price elasticity" and "Real time pricing" don't appear in the abstract (This paper presents a summary of Demand Response (DR) in deregulated electricity markets. The definition and

the classification of DR as well as potential benefits and associated cost components are presented. In addition, the most common indices used for DR measurement and evaluation are highlighted, and some utilities' experiences with different demand response programs are discussed. Finally, the effect of demand response in electricity prices is highlighted using a simulated case study.), but from the main body of the paper.

Eg.3

Keywords: Voltage stability; Shunt reactive compensation; Channel components transformation

In example 3, there are three keywords from the paper title: "Application of Channel Components Transform to Design Shunt Reactive Compensation for Voltage Stability Improvement".

Eg.4

Keywords: State estimation; Linear programming; Weighted absolute value; Interior point methods

There are four keywords, among them, "State estimation" and "Interior point methods" are from the paper title: Solving state estimation in power systems by an interior point method）. Another keyword "Linear programming" is from the first sentence of the abstract: A linear programming formulation is employed to solve the static state estimation problem in power systems using the primal–dual predictor–corrector algorithm. The keyword "Weighted absolute value" comes from the paper.

3.3 The Order of Keywords

Keywords from the title of the paper are usually arranged in the order in which they appear in the title. The order of keywords should conform to people's logical thinking. English keywords are usually placed after the English abstract and start on another line. In the past, most keywords (or phrases) were separated by two spaces. With the development of computer technology, in order to facilitate computer retrieval, the use of separator to space each keyword is common, such as, semicolon ";", or comma ",". English keywords generally use all lowercase form, sometimes the first letter of the word should be capitalized according to the requirement of the journal.

The following examples are from the papers "Optimal Placement of Faulted Circuit Indicators in Power Distribution Systems" and "Partial Discharge Signal Denoising with Spatially Adaptive Wavelet Thresholding and Support Vector Machines" by Hilton de Oliveira Mota，M.C. de Almeida in the journal *Electric Power Systems Research* (2011, vol. 81, pp.699–706, pp.644-659）).

Eg.1

Keywords: Fault location; Impedance-based methods; Sensor placement; Genetic algorithm

Eg.2

Keywords: Partial discharges; Wavelet transform; SVM; Denoising; On-site measurements

Eg.3

Keywords: Genetic algorithm; Unit maintenance scheduling; Power system

In the examples above, the keywords are from the title of papers and arranged according to their order in the title. Semicolons are used as separators to space each keywords.

CONCLUSION

An abstract is a condensed summary of the scientific and technological paper which the readers first contact with. Whether a scientific and technological paper will gain attention from potential readers or not is typically decided by the quality of its abstract. Therefore, mastering the English abstract writing techniques is of importance for scientific and technology papers. This paper analyzes the abstract types, the contents of the abstract and the writing of the keywords so as to provide extremely useful information for paper writers. Of course, as abstract authors, we should not only correct our attitude, pay attention to the writing standards of the abstract strictly and conform to the structure and length of the English abstract, but also comply with the requirements of the journal. Only in this way can the author of the paper improve the quality of English abstract writing and adapt to the changes of the new international academic situation.

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