

## 论文标题 (请勿使用缩写或特殊字符)

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作者单位 (请勿在此填写单位信息，该信息将从 **MyTechZone** 或 **Editorial Manager®** (EM) 的“参与者”页面中自动提取)

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*Helpful for experienced and new authors, the purpose of this paper is to provide guidance for the preparation of an SAE International technical paper. Guidance on each technical paper element has been placed in the appropriate section as much as possible.*

*A technical paper is a fact-based document used to close a project or a piece of work. Papers are written in an objective, formal, impersonal, third-person style (not using "I" statements, with no commercialism.*

*SAE International does not restrict the number of pages for a technical paper, although the recommended length is 9-12 pages in a 2-column format. This template is not required and is simply a guide, but it is strongly recommended that it be used; however, please make sure an Abstract and Keywords are included in the manuscript.*

*Guidelines for submitting a Revised Manuscript are provided at the end of this document.*

无论是对经验丰富的作者还是新作者而言，本文的目的在于为 SAE International 技术论文的撰写提供指导。针对技术论文各组成要素的说明已尽可能安排在相应章节中。

技术论文是一种以事实为依据的文件，用于对一个项目或一项工作的成果进行总结。论文应采用客观、正式、去个人化的第三人称写作方式（不得使用“**I**”等第一人称表述），且不应包含任何商业宣传内容。

SAE International 对技术论文的页数不作限制，但建议在双栏排版格式下控制在 9 - 12 页之间。本模板并非强制要求，仅作为参考指南，但强烈建议使用；同时请务必确保稿件中包含摘要 (Abstract) 和关键词 (Keywords)。

有关提交修订稿的指南详见本文档末尾。

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**NOTE:** You must include all co-authors at the initial submission stage. After assigning copyright, no changes can be made to the author list.

**注意：** 作者必须在首次投稿阶段列出所有共同作者。一旦完成版权转让，作者名单将不得再作任何更改。

### Abstract 摘要

The abstract is what readers look at first to decide whether the paper is relevant to their work and whether they should read the paper for their own research work; therefore, it is critical to provide necessary information in the abstract. The abstract should provide clear and concise statements on the contents of the paper. It should contain information on what the work is about; how the work is different from

other previously published, related work; a brief discussion on the novelty of the work; the methodology that has been followed; and the theory that has been used to complete the work. The abstract is a self-standing portion and should *not* include references, footnotes, or figures and tables (or references to them). It should include brief findings, solutions, impacts, and concluding remarks of the work. The abstract should be one paragraph, with 250-300 words. Symbols, special characters, abbreviations, footnotes, and math should not be used in the abstract.

摘要 是读者首先阅读的内容，用以判断论文是否与其工作相关、是否值得阅读全文，因此在摘要中提供必要信息至关重要。摘要应对论文内容作出清晰、简明的陈述，包括：研究工作的主要内容；与此前已发表相关研究的区别；对工作创新点

的简要说明；所采用的方法；以及用于完成该研究的理论基础。摘要应为一个独立部分，**不得包含参考文献、脚注、图表或对图表的引用**。其内容应包括研究的简要结果、解决方案、影响及结论性表述。摘要应为单段，字数控制在 250 – 300 词之间，且不得使用符号、特殊字符、缩写、脚注或数学公式。

## Keywords 关键词

Keywords are essential to make your paper discoverable through search engines. Include 5-8 appropriate keywords to precisely reflect the research content and scope.

关键词对于论文被搜索引擎检索发现至关重要。请提供 5 – 8 个能够准确反映研究内容和范围的关键词。

## Introduction 介绍

The purpose of this document is to help the author write an SAE technical paper. The paper, in this case, will be a peer-reviewed paper and will most likely be presented at a conference. Although the depth of your research done, actual work done, and the findings of the work could be different (based on conference or journal papers), there are certain consistencies that need to be maintained in writing a technical paper, and this is what is emphasized in this document. The highest quality event papers will be considered for publication in the *SAE International Journal of Advances and Current Practices in Mobility*.

本文件旨在帮助作者撰写 SAE 技术论文。此类论文通常为同行评审论文，并很可能在会议上宣读。尽管不同论文在研究深度、实际工作内容及研究结论方面可能存在差异（取决于会议或期刊类型），但在技术论文写作过程中仍需保持一定的一致性，本文件正是对这些共性要求加以强调。质量最高的会议论文将有机会被选中发表于《SAE International Journal of Advances and Current Practices in Mobility》。（注：非 SAE 自有平台同行评审论文，不进行推优）

This document concerns content and suggestions for improvement of your work only. Formatting instructions can be found in the Style Guide on the author resources page of the SAE website: <http://volunteers.sae.org/authors/styleguide.pdf>. Note: The final formatted, published paper may not look like the final author-formatted submitted paper.

本文件仅涉及内容层面的指导及改进建议。具体格式要求可参阅 SAE 官网作者资源页面中的《Style Guide》：<http://volunteers.sae.org/authors/styleguide.pdf> 请注意：最终出版的论文格式可能与作者提交的排版版本并不完全一致。

Prior to writing the technical paper, it is recommended that the author prepare an outline following the

guidelines mentioned in this document. This will help to express thoughts in a systematic manner.

在撰写技术论文之前，建议作者依据本文件中的指南先拟定论文大纲，这将有助于系统化地表达研究思路。

The Introduction of the paper is very important and serves three purposes:

1. It discusses the importance and motivation behind the work. The Introduction must indicate why the work presented in the paper is significant, and it should introduce the reader to the paper's objective, motivation, and scope.
2. The Introduction states how the paper adds to the existing knowledge of similar work that has been done. This should be discussed further by acknowledging and citing references of the papers obtained from a literature review, so that the reader can learn more about what has been done so far in this area. All claims, statements of fact, or new data/information must be supported by references. Authors may choose to provide a literature review section that appears immediately after the Introduction (see next section).
3. The Introduction must give an outline of the paper that helps the reader understand what to expect in the remainder of the paper.

引言在论文中至关重要，主要承担以下三个功能：

1. 讨论研究工作的意义及其背后的动机。引言必须说明论文所呈现工作的必要性与重要性，并向读者介绍论文的研究目标、动机及范围。
2. 说明论文如何在已有研究基础上有所拓展或补充。这应通过对文献综述中获取的相关论文进行引用和讨论，使读者了解该领域目前的研究现状。所有论断、事实陈述或新增数据/信息均必须有参考文献支持。作者也可以选择引言之后单独设置“文献综述”章节（详见下一部分）。
3. 对全文结构进行概述，使读者清楚了解论文后续内容安排。

Each of these three areas can be addressed by separate subsections within the Introduction.

上述三个方面可通过引言中的不同小节分别加以阐述。

The Introduction should be concluded with a summary description of the paper's upcoming sections. The paper should have a smooth flow of content, telling a succinct story of the research work that has been completed. The conclusion of the Introduction should clearly identify for the reader the paper's purpose and highlight discussions that will be covered in the remainder of the paper.

引言应以对后续章节的概括性说明作为结尾，确保全文逻辑连

贯、结构流畅，清晰讲述已完成研究工作的整体脉络。引言结尾应明确指出论文的研究目的，并突出说明后文将展开讨论的重点内容。

## **Literature Review and References**

### **文献综述与参考文献**

All claims, statements of fact, or new data/information must be supported by references. Referring to other researchers' work on the same or similar topic authenticates the current work and allows an author to acknowledge the related work of other researchers. The author is most likely basing the paper upon another's or his or her own past work, and often an author will forget to recognize those works. A comprehensive Reference list helps to lend credibility to a technical paper and allows the reader to find related works more easily.

所有论断、事实陈述或新增数据/信息均必须有参考文献作为支撑。引用其他研究者在相同或相似主题上的研究成果，有助于验证当前工作的可靠性，并使作者能够对相关领域已有研究加以致谢与认可。作者往往是在他人或自身既往工作的基础上开展研究，但在实际写作中容易忽略对这些成果的明确引用。完善的参考文献列表不仅能够提升技术论文的可信度，也便于读者更有效地查找相关研究。

Citing other works is the standard method of authenticating data, crediting other researchers in the field, and guiding the reader to other, similar information. Authors are strongly encouraged to summarize other work in the Introduction of the paper or include a Literature Review section to recognize and cite relevant publications outside of their own work to create more comprehensive manuscripts with greater long-term reference value and greater chance for being cited and for acceptance for publication. Authors should include references to technical papers and journal articles but may also consider books and book chapters if they are truly archival and pertinent to the technical paper.

引用其他研究成果是验证数据、致谢领域内其他研究者以及引导读者获取相关信息的标准做法。强烈建议作者在论文引言中对相关研究进行总结，或单独设置“文献综述”章节，对自身研究以外的相关出版物进行梳理与引用，以构成更加完整、具有长期参考价值的稿件，并提高论文被引用及被接收发表的可能性。引用内容应以技术论文和学术期刊文章为主，如相关书籍或章节确属具有档案价值且与技术论文高度相关，也可予以考虑。

References also allow one to distinguish what work has already been done and what new information is being presented in the current paper. For an event or non-event technical paper, it is strongly recommended that there be a minimum of 10-15 related references in the paper.

参考文献还有助于区分已有研究成果与本文所提出的新信息。对于会议或非会议类技术论文，强烈建议至少包含 10-15 篇相关参考文献。

Authors should not rely on websites, private communications, textbooks, manuals, and technical data sheets but should, instead, include references of technical papers and scholarly journal articles. At least 8 relevant journal articles published in the most recent 3 years are recommended to include in the references.

作者不应依赖网站、私人通信、教材、手册或技术数据表，而应优先引用技术论文和学术期刊文章。建议参考文献中至少包含 8 篇近 3 年内发表的相关期刊文章。

The best-quality event papers (with a minimum of 15 references) will be considered for selection to the [SAE International Journal of Advances and Current Practices in Mobility](#), which publishes the top papers from each event at a time after the event, and authors will be informed by email if selected.

质量最优的会议论文（至少包含 15 篇参考文献）将有机会被遴选发表于《[SAE International Journal of Advances and Current Practices in Mobility](#)》。该期刊将在会议结束后择优刊发各场会议中的优秀论文，如被选中，作者将通过电子邮件收到通知。（注：非SAE自有平台同行评审论文，不进行推优）

In the body of the paper, citations should be numerically identified using square brackets inserted in the text and numbered sequentially in order of appearance, as in [1,2] or [1-3]. The citations are listed in the References section of the paper.

在正文中，引用应以方括号形式标注，并按出现顺序依次编号，例如 [1,2] 或 [1-3]。对应文献信息应统一列于论文的“参考文献”部分。

## **Body of the Paper 正文**

### **General Overview 总体说明**

A paper will have several sections necessary to provide different types of information. Examples of these sections include Abstract, Keywords, Introduction, "Body of the Paper," Conclusion(s), References, and Acknowledgements. The body of the paper should include a detailed and structured description of the work performed, including (as appropriate) methodology, assumptions, hardware, observations, analysis, and a comparison of results with prior work.

一篇技术论文通常包含多个章节，用于呈现不同类型的信息，例如摘要、关键词、引言、正文、结论、参考文献和致谢等。

正文部分应对所开展的工作进行详细且结构清晰的描述，包括（视具体情况而定）研究方法、假设条件、硬件设备、观察结果、分析过程，以及与既有研究结果的比较。

Each section starts with a subhead. Following the Introduction is the “Body of the Paper.” This is the main section of the paper where the actual work is discussed. This section is not entitled “Body of the Paper.” Rather, it is comprised of multiple sections and subsections titled/labeled using topical headings in a multi-level structure suitable for the work presented. The subsections should start with a subheading. Likewise, there could be sub-subheadings within a subsection. Although no specific heading titles are mandated, common examples include Methods, Results, and Discussion.

每一章节均应设有小标题。引言之后即为论文的“正文”部分，这是论文的核心内容，用于阐述具体研究工作。但该部分不应直接命名为“Body of the Paper”，而应根据内容采用多层次结构，以主题性标题对不同章节和子章节进行命名和划分。各小节应以小标题开头。在某些小节之下，还可以设置更细的子小节。虽然并未强制规定具体标题名称，但常见的示例如：Methods（方法）、Results（结果）和 Discussion（讨论）等。

This main section shall include a detailed and structured description of the work performed, including (as appropriate) methodology, assumptions, hardware, observations, analysis, and a comparison of results with prior work. This may include theoretical work, analytical derivation, measurements, and such other topics.

正文部分应对研究工作作出全面而系统的说明，包括（视情况而定）研究方法、相关假设、硬件配置、实验或观测结果、数据分析过程以及与以往研究成果的对比。这些内容可涵盖理论研究、分析推导、测量数据及其他相关主题。

The information presented shall be self-contained (in the sense that the reader is not assumed to have read prior papers) and provide an appropriate level of detail for the intended audience; however, references must be used to cite published work on related topics as appropriate. All terms and acronyms must be defined the first time they are mentioned (with the acronym in parentheses) and used consistently throughout the remainder of the paper.

所呈现的信息应具备自洽性（即不假设读者已阅读过此前论文），并应根据目标读者群体提供适当深度和细节；同时，应在适当位置引用已发表的相关研究成果。所有术语和缩写首次出现时必须加以定义（在括号中标明缩写），并在全文中保持一致使用。

## **Language Considerations 语言规范**

Standard rules for written English should be followed in the text of the paper. U.S. spelling and grammar should be applied consistently. Standard grammar will ensure that the paper is easily understood by a wide audience, including those not having English as a primary language.

论文正文应遵循标准书面英语规则，并统一采用美式拼写和语法。规范的语法有助于确保论文能够被更广泛的读者群体理解，包括英语非母语读者。

Spell-check and grammar-check software may be used to inspect the written text but should not be a substitute for a thorough personal review. A review by authors fluent in English is one way to check the grammar, but this must be completed prior to the SAE peer-review process. (Official SAE reviewers and organizers do not provide this service.) The complexity of the technical subject or an author’s difficulty with technical writing are never excuses to avoid following these guidelines. A person unfamiliar with the topic should be able to read the paper and understand the general theme.

可以使用拼写和语法检查软件对文本进行初步校对，但不得以此替代作者认真、全面的人工审阅。由英语水平较高的作者进行审校是一种有效方式，但该过程必须在 SAE 同行评审开始之前完成。（SAE 官方审稿人和组织方不提供此类语言校对服务。）技术内容的复杂性或作者在技术写作方面的困难，均不能作为不遵循上述语言规范的理由。即使对该领域并不熟悉的读者，也应能够阅读论文并理解其基本主题。

Many companies provide substantive editing, including, but not limited to:

许多公司提供专业性的学术语言润色服务，包括但不限于以下机构：

- The Charlesworth Group (<http://www.charlesworthauthorservices.com/>)
- American Journal Experts (<http://www.journalexperts.com/>)
- Editage (<http://www.editage.com/>)
- International Science Editing (<http://www.internationalscienceediting.com/>)
- Write Science Right (<http://www.writescienceright.com/>)

Please note that SAE does not endorse these vendors, nor does it guarantee acceptance of a submission edited by any of these vendors.

请注意，SAE 并不对上述任何机构进行背书或推荐，亦不保证经其润色后的稿件一定会被接受发表。

## **Use of Artificial Intelligence 人工智能的使用**



The use of artificial intelligence (AI) in research is expanding rapidly, and SAE's position is that AI cannot and should not be listed as an author of a publication because AI tools do not meet the definition of an author. Because AI-generated content may not be protected by copyright, SAE authors may not use AI to generate written text, images, or artwork, but may use AI for grammar and punctuation corrections. Use of an AI tool for any such work must be detailed in the manuscript in a separate section at the end of the paper (see sample, page 9).

人工智能（AI）在研究中的应用正在迅速扩大，SAE 的立场是，AI 不能也不应被列为出版物的作者，因为 AI 工具并不符合“作者”的定义。由于 AI 生成的内容可能不受版权保护，SAE 作者不得使用 AI 来生成书面文本、图片或插图，但可以使用 AI 进行语法和标点修正。凡是在论文写作过程中使用 AI 工具进行上述任何工作的，必须在论文末尾以单独章节的形式进行说明（参见第 9 页示例）。

## **Commercialism 商业化表述**

The paper shall not be commercial in nature. Any commercialism should be eliminated and commercial overtones limited; however, the inclusion of the names of any hardware, software, or other tools used in the technical analysis, evaluation, or methodology is permissible if these are cited properly, as mentioned here. Note that a commercial reference (e.g., product name) may be mentioned once each in the Title, Abstract, and Introduction (for instance, to mention the trade name of a product that is the subject of a paper). Alternatively, a commercial reference may be placed at the end of the paper in an Acknowledgements section. There is no restriction on the number of citable (published) commercial references in the References section, but these should be kept to a minimum. More information on commercialism is located at <https://www.sae.org/publications/author/commercialism-guidelines>.

论文不得具有商业推广性质。应消除任何商业性内容，并尽量减少带有商业倾向的表述；但在技术分析、评估或方法论中，如需提及所使用的硬件、软件或其他工具名称，在按规范引用的前提下是允许的。需要注意的是，商业性引用（例如产品名称）在标题、摘要和引言中各可出现一次（例如用于说明作为研究对象的产品商标名称）。或者，也可以将商业性引用统一放在论文末尾的“致谢”部分。在“参考文献”部分中，对已发表的商业性资料的引用数量不作限制，但建议尽量控制在最低限度。有关商业化表述的更多信息，请参阅：

<https://www.sae.org/publications/author/commercialism-guidelines>

The following is an example of a statement demonstrating unacceptable commercialism or advertising: "Tests on XYZ Corporation's Superproduct 1000 have demonstrated the superior quality of our

product."

以下为不可接受的商业宣传示例：“对 XYZ 公司 Superproduct 1000 的测试结果表明，我们的产品具有卓越的质量。”

## **Avoidance of Personal Opinions 避免主观意见**

Personal opinions and exaggerations should be avoided in writing a technical paper. A few examples of types of opinions follow, which should be avoided:

- Editorial comments, such as: "The jet aircraft costs \$5,500,000. This is a substantial sum of money despite the casualness with which million-dollar sums are bandied about these days."
- Personal history, such as: "The first military prestressing problem that came to my desk was in 1938 in connection with a request from the Army that we increase the displacement of its truck engines."
- Unsubstantiated sweeping statements, such as: "I believe I can safely say that practically every failure of a new or retreaded jet tire, where the cause could be ascertained, has proved to be the result of a manufacturing error."

在技术论文撰写中，应避免使用带有个人主观色彩的观点和夸张性表述。以下为应当避免的几种意见类型示例：

- 编辑性评论，例如：“该喷气式飞机售价为 5,500,000 美元。尽管如今人们对数百万美元的金额司空见惯，但这仍是一笔相当可观的支出。”
- 个人经历性表述，例如：“我接触到的第一个军用预应力问题是在 1938 年，当时军方要求我们提高其卡车发动机的排量。”
- 缺乏依据的泛泛而谈，例如：“我可以很有把握地说，几乎所有新型或翻新的喷气式轮胎发生故障，只要能够查明原因，最终都被证明是制造错误所致。”

## **Plagiarism and Self-Plagiarism 剽窃与自我剽窃**

The paper shall not have any plagiarism. Plagiarism is committed when an author purposely uses one's own or someone else's previous work, language, thoughts, or ideas without acknowledging the original source and/or getting proper approval from the original source. Plagiarism is defined as the unauthorized and/or unacknowledged use or imitation of works, language, and ideas of another. Generally, in the context of publication, plagiarism occurs when one researcher/author uses the words, language, tables/figures, or ideas of another researcher/author without making it clear within the text or referencing of

the source that this has occurred, that is, passing off a piece of research or text as his or her own.

论文不得包含任何形式的剽窃。若作者在未注明原始来源和/或未取得原始来源正式授权的情况下，故意使用自己或他人曾经发表的作品、语言、思想或观点，即构成剽窃。剽窃是指未经授权和/或未加说明地使用或模仿他人的作品、语言和思想。通常在出版语境中，当一名研究者/作者在未明确说明出处、未在正文中加以标注或引用的情况下，使用了另一名研究者/作者的文字、语言、图表或思想，并将其作为自己的成果发表，即构成剽窃行为。

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号即可（相关示例见第 5 页图 1 及第 6 页表 1）。

Units of Measure 计量单位

The long-term goal for SAE is international communication with minimal effort and confusion; therefore, the use of SI units in all technical publications and presentations is required.

SAE 的长期目标是实现高效、清晰的国际技术交流，因此在所有技术出版物和展示中原则上应使用国际单位制（SI）。

SAE also recognizes that sectors of the mobility market do not yet use SI units because of tradition, regulatory language, or other reasons. Mandating the use of SI units in these cases will impede, rather than facilitate, technical communication; therefore, it is the policy to allow non-SI units and dual dimensioning where communication will be enhanced.

同时，SAE 也认识到，由于传统、法规语言或其他原因，出行与交通领域的某些行业尚未全面采用 SI 单位。在这种情况下，强制使用 SI 单位反而可能妨碍技术交流。因此，SAE 的政策允许在有助于沟通的前提下使用非 SI 单位或采用双单位制标注。

Example of Units 单位示例

The general rule for capitalization is based on whether the unit was based on a proper noun, e.g., Newton. A few examples of units are shown here:

单位大小写的一般规则取决于该单位是否源自专有名词，例如 Newton（牛顿）。以下为部分单位示例：

- Hz
- dB
- km
- Nm
- kPa
- KHz

Methodology 方法学

While writing a technical paper, the author shall state clearly everything that is necessary in setting up the work. This may include a description of any hypotheses, all implicit and explicit assumptions, equations, boundary conditions, different analysis techniques for solving analytical problems, equation verification, measurement setup, and all other pertinent items that make this paper a quality paper. The author shall use correct and consistent terminology used in the discipline. Addressing these elements properly is not only important for the credibility of the author and the paper, but also for successive researchers to classify the work and to duplicate the study should that be required.

在撰写技术论文时，作者应清晰说明开展研究工作所需的所有

关键内容。这可能包括：研究假设的描述、所有隐含与明确的假设条件、公式、边界条件、用于解决分析问题的不同分析技术、公式验证过程、测量装置配置，以及其他所有有助于提升论文质量的相关要素。作者应使用本学科中正确且一致的专业术语。对上述内容进行规范而充分的说明，不仅对作者和论文的可信度至关重要，也有助于后续研究人员对该研究进行分类，并在必要时复现实验或研究过程。

A few specific items for preparing a paper based on experimental work include the following:

- a description of the work and method used
- a description of the measurement setup such that the experiment can be reproduced by others
- a discussion of the basis of the measuring principle/comments on the accuracy, precautions, and limitations on the measurement technique in general

基于实验研究的论文，建议至少包括以下内容：

- 对研究工作及所采用方法的描述
- 对测量装置配置的说明，以确保他人能够重复该实验
- 对测量原理的基础说明，以及对测量技术准确性、注意事项和局限性的讨论

The paper should not list the equipment used like it may be listed in a laboratory report unless some specific equipment needs to be described to understand the work. An example of this could be: An HP Geiger counter, model xyz, was used to do the work. However, the serial number of the equipment should not be mentioned.

论文不应像实验报告那样详细罗列所使用的所有设备，除非某些特定设备对于理解研究工作至关重要。例如，可以表述为：“使用型号为 xyz 的 HP 盖革计数器完成相关测试”，但不应提及设备的序列号。

For simulation and analytical work, the system model needs to be described clearly. This includes identifying any commercially available software that may have been used to do the study. If proprietary software or special software has been developed, then the fundamental equations that are involved need to be discussed and identified so the credibility of the work is substantiated; however, the author must be careful so that there is no commercialism or commercial overtone. Information on various quality metrics, such as mesh geometry, justification of mesh sizes, and/or nodal boundary conditions needs to be provided.

对于仿真和分析类研究，必须清晰描述系统模型，包括说明是否使用了商用软件进行研究。如果开发了专有软件或定制软件，则应讨论并明确其中所涉及的基本方程，以支撑研究工作的可信度；但作者需特别注意避免任何带有商业宣传性质或商业倾向的表述。同时，还应提供各类质量指标相关信息，例如

网格几何结构、网格尺寸合理性的说明、以及节点边界条件等内容。

## Analysis 分析

Analysis could be of two types, qualitative and quantitative. Qualitative means obtaining an in-depth understanding of properties of the product or the solution obtained. Quantitative means obtaining numerical values of the product or the solution obtained and thereby determining the performance metric of the product and/or the solution. These should be clearly discussed and explained for the long-term value of the work. In discussing the analysis process, tables, graphs, and photographs should be used to help visualize and explain the results of the analysis. The tables, graphs, and photographs need to be explained clearly to convey what they mean/stand for as opposed to just mentioning that the results are shown in the figure. Wherever possible, comparison results should be provided in graphical form rather than tabular form.

分析可分为两种类型：定性分析和定量分析。定性分析旨在对产品特性或所得解决方案进行深入理解；定量分析则侧重于获取产品或解决方案的数值结果，从而确定其性能指标。这两类分析内容均应进行清晰阐述和说明，以体现研究工作的长期价值。在讨论分析过程时，应使用表格、图形和照片等形式，帮助对分析结果进行可视化展示和解释。所使用的表格、图形和照片必须配以清晰说明，以准确传达其所代表的含义，而不仅仅是简单指出“结果如图所示”。在条件允许的情况下，比较性结果应尽量以图形形式呈现，而不是仅以表格形式展示。

## Examples of Illustrations, Equations, and Tables

### 插图、公式与表格示例

This section provides examples of various illustrations or tables that may be used to prepare a quality paper.

本节提供了可用于撰写高质量论文的各类插图、公式和表格示例。

### Examples of Equations 公式示例

Three examples of equations are shown here. All equations wider than 3.5 inches must be wrapped to the next line as shown in Equation 2. For more information on how to split an equation, see the [SAE Style Guide](#). Variables used in equations need to be defined in a Nomenclature section at the end of the paper or following the actual equation as shown in Equation 3.

此处展示了三个公式示例。所有宽度超过 3.5 英寸的公式必须如公式 2 所示换行显示。有关如何拆分公式的更多信息，请参阅 SAE [《写作格式指南》（SAE Style Guide）](#)。公式中使用

的变量必须在论文末尾的“符号说明（Nomenclature）”章节中加以定义，或如公式 3 所示，在公式后进行说明。

$$\frac{d\lambda}{dt} = \left[ \frac{\sqrt{1+161\left(\frac{x}{x^+}\right)^2} - 12}{2(A/F)_{st}} - \frac{\sqrt{1+161\left(\frac{x_{prev}}{x^+}\right)^2} - 1}{2(A/F)_{st}} \right] (1 - BGF_{st}) \cdot \frac{12}{(t-t_{prev})} \quad (1)$$

$$\Delta K_{aero\_f}(0) = -\frac{1}{2} \frac{\partial K_f}{\partial W_f} L_{aero\_f} + \dots + \frac{1}{2l} \left( l_r \frac{\partial F_{aero\_y}}{\partial \beta} + \frac{\partial M_{aero\_z}}{\partial \beta} \right) \left( \frac{l_f}{l_r K_r} - \frac{l}{mV^2} \right) K_f \quad (2)$$

$$N = L^m \quad (3)$$

where:

$N$  = number of possible designs  
 $L$  = number of levels for each factor  
 $m$  = number of factors

#### Examples of Figures 图示示例

Three examples of figures are shown:

- photograph
- a schematic or qualitative data
- graphical presentation of data

以下展示了三种图示示例类型：

- 照片
- 示意图或定性数据图
- 数据的图形化呈现

For a schematic or qualitative data presentation, the axes should be identified and should be legible if printed on an 8.5"x11" or A4 size paper.

对于示意图或定性数据的展示，坐标轴必须清晰标注，并确保在以 8.5" × 11" 或 A4 纸张尺寸打印时仍然清晰可辨。

When plotting data in a graphical form, all the axes should be labeled with the proper units. If, for proprietary reasons, the actual data cannot be shared, the data should be non-dimensionalized, normalized, or provide relative data for presentation purposes. The axes information, including the numerical values of the tick marks, should be legible if printed on an 8.5" x 11" or A4 size paper.

在以图形形式绘制数据时，所有坐标轴都应标注正确的单位。如果由于保密或专有原因无法共享真实数据，则应对数据进行无量纲化、归一化处理，或以相对数据形式进行展示。包括刻度数值在内的坐标轴信息，在以 8.5" × 11" 或 A4 纸张尺寸打印时必须保持清晰可读。



Figure 1. Example of a figure and figure caption, which is reprinted from another source. The sample figure has been sized to 3.5 inches wide, which is the recommended size. Captions for figures are placed below the figure. Reprinted from Ref. [X] with permission from Publisher Name. © Year, Publisher Name.

图 1. 示例图及其图题，转载自其他来源。该示例图的宽度为 3.5 英寸，为推荐尺寸。图注应置于图的下方。经出版社名称授权转载，来源：参考文献 [X]。© 年份，出版社名称。

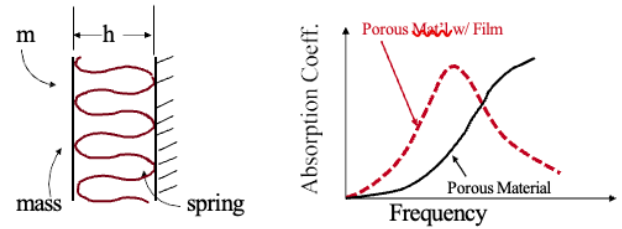


Figure 2. Example of a schematic and qualitative data.

图 2. 示意图及定性数据示例。

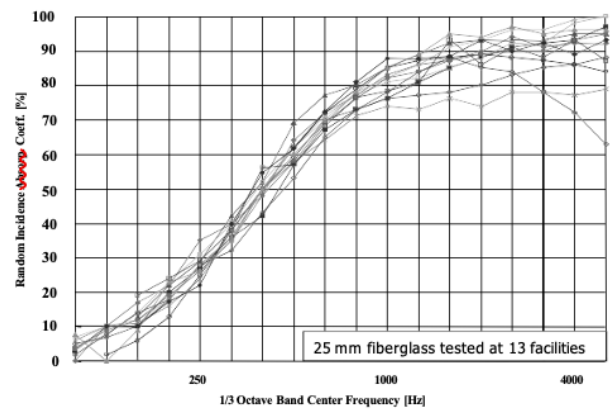


Figure 3. An example of a graphical figure used for data presentation with a reference to related work (data from Ref. [5]).

图 3. 用于数据展示的图形示例，并引用了相关研究成果（数据来源：参考文献 [5]）。



**Table 1. Example of a table and table title. The title for a table is placed above the table. For tables, the recommended size is 3.5 inches. See below the table for an example of an attribution for the data that was taken from another source to create the table.**

**表 1. 表格及其标题示例。表格标题应置于表格上方。对于表格，推荐尺寸为 3.5 英寸。请参见表格下方关于引用他人数据构建该表格的来源说明示例。**

Displaced volume	1966 cc
Stroke	154 mm
Bore	127.5 mm
Connecting Rod	255 mm
Compression ratio	14.3:1
Number of Valves	4
Exhaust Valve Open	34° BBDC @ 0.15 mm lift
Exhaust Valve Close	6° BTDC @ 0.15 mm lift
Inlet Valve Open	2° BTDC @ 0.15 mm lift

Data taken from Ref. [X].

**Example of Table 表格示例**

Table 1 above is an example that includes a footnote sample for the use of data from another source.

上述表 1 为示例，其中包含一个脚注示例，用以说明表格中使用了来自其他来源的数据。

**Summary: Illustrations, Equations, and Tables**

总结：插图、公式与表格

The preferred size for equations, figures, and tables is 3.5 inches or one column width. If these elements are such that they cannot be placed in a 3.5-inch space (i.e., in one column), they can be placed using the entire width of the page (i.e., using both columns). (Requests to increase or decrease image sizes prior to publishing cannot be honored.) Please keep in mind the sizing when labeling your figures so that they are readable.

公式、图示和表格的推荐尺寸为 3.5 英寸（即单栏宽度）。如果这些元素无法放置在 3.5 英寸的空间内（即无法适应单栏），则可以使用整页宽度进行排版（即跨双栏显示）。（在出版前提出放大或缩小图像尺寸的请求将不予受理。）请在标注图示时充分考虑其尺寸，以确保内容清晰可读。

**How to Cite References**

**参考文献引用方式**

Only publicly available references may be used. Scientific and engineering peer-reviewed publication is the basis for all engineering and scientific claims. All claims or statement of facts made in the paper shall be supported by references. An occasional exception to this would be a “private communication.” Referencing material posted on the general internet is discouraged because it may not have a long-term

value because the information may be removed from the internet at a future time and therefore not searchable. If such a reference is added, the date when it was accessed should be included in the reference.

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Authors should provide direct references to original research sources whenever possible. References to review articles can be an efficient way to guide readers to a body of literature but may not always reflect original work accurately.

作者应尽可能直接引用原始研究文献。虽然综述性文章可作为引导读者了解某一研究领域的有效方式，但其内容未必完全准确反映原始研究成果。

References need to be compiled in numerical order as they are cited in the paper. Each reference is cited using a number within square brackets [1]. These are numbered sequentially in the order of first appearance. It is strongly encouraged to include works that are not older than 10 years. Examples of references are provided at the end of this document under the heading of References. The list of references is to be provided at the end of the paper, after Summary/Conclusion(s) (and Recommendation, if present) and before Acknowledgements or other closing sections.

参考文献应按其在论文中出现的顺序进行编号，并以方括号形式标注，如 [1]，按首次出现的顺序依次编号。强烈建议引用近 10 年内发表的文献。参考文献示例见本文档末尾

“References” 部分。参考文献列表应置于论文末尾，在“总结/结论”（以及建议部分，如有）之后、“致谢”或其他结束性章节之前。

Depending on the content of the work, references should also be cited under different sections or subsections, such as Introduction, Literature Review, Methodology, Analysis, or other section. Authors should not reference information that could change or that may not be available at a later time. An example of this is certain information posted on the internet (company website, blog, Wikipedia®, etc.) unless the information is truly archival.

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All details of the reference citation need to be accurate: author, title of article, proceedings, journal title, volume and page numbers where it was presented, date published, DOI, etc. SAE follows the *Chicago Manual of Style* for references.

所有参考文献的引注信息必须准确无误，包括作者、文章标题、会议论文集或期刊名称、卷号、页码、发表日期、DOI 等。SAE 采用《芝加哥格式手册（Chicago Manual of Style）》作为参考文献格式标准。

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Table 2 includes a list of different types of references with the corresponding Reference numbers, which are included in the References list below.

表 2 列出了不同类型参考文献及其对应的参考编号，这些编号已包含在下方的参考文献列表中。

Table 2. Reference examples.  
表 2. 参考文献示例。

Reference Type	Corresponding Reference Number
Personal Communication	[1]
Video	[16]
General Website	[17]
Book	[2] (with chapter reference,) [11] (with page numbers)
Conference/technical paper or presentation with no DOI	[5]
Conference/technical paper with paper number or DOI	[3,4,18]
Journal article	[6,7]
Journal article with DOI	[19-33]
Magazine article	[8]
Standards	[9,10]
Patent	[12]
Thesis/Dissertation	[13]
Software	[14]
CD-ROM	[15]

For complete formatting guidelines, please visit  
完整格式指南请参见：  
<http://volunteers.sae.org/authors/FormattingCitations.pdf>.

## Discussion 讨论

This section of a paper is important because the objective is to provide an interpretation of the data and important findings of the work discussed in earlier sections. This section also leads to the Summary/Conclusion(s).

本节非常重要，其主要目的是对前文所述研究数据及重要发现进行解释和阐释。本部分内容还将自然过渡至“总结 / 结论”章节。

## Summary/Conclusions 总结 / 结论

Serving several purposes, this section shall state a summary of the key learnings from the work presented, including the problem and the solution. This section should also state precautions, limitations, and disadvantages of the work, if any. Depending on the work, this section may also include an explanation on the impact of this work on future work.

该部分具有多重功能，应对研究工作的关键成果进行总结，包括所研究的问题及其解决方案。同时，如存在相关注意事项、局限性或不足之处，也应在此明确说明。根据研究内容的不同，本节还可对该研究对未来工作的影响进行说明。

## Recommendations 建议

The Conclusion(s) may often result in some kind of a recommendation. When done properly, the Conclusions and Recommendations will be separate sections that can easily define the value of the work and can, in fact, generate future work as a result.

结论部分通常会引出相应的建议。如处理得当，“结论”和“建议”应作为两个独立章节加以呈现，以清晰界定研究工作的价值，并有助于推动后续研究工作的开展。

## References 参考文献

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### Example

SA Sample abbreviations  
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$$STL = 10\log_{10}\left[\left\{1+\eta\left(\frac{P\omega\cos\theta}{2\rho c}\right)\left(\frac{B\omega^2}{P_s c^4}\sin^4\theta\right)\right\}+\left(\frac{P\omega\cos\theta}{2\rho c}\right)^2\left(1-\frac{B\omega^2\sin^4\theta}{P_s c^4}\right)\right]^2 \tag{A1}$$

Table A1. DOE cases considered and their effect on the study.  
表 A1. 所考虑的 DOE 工况及其对研究的影响。

			Influence of Different Factors (%)		
Frequency Range	Frequency (Hz)	General System Behavior	Ratio of Wear to Mass-Filled Layer Density	Mass-Filled Layer Thickness	Decoupler Density
Range 1	125 to 315	Coupled System	3	10	86
Range 2	400 to 1000	Double Wall Resonance Effects	1	3	96
Range 3	1250 to 3150	Transition Region	3	3	90
Range 4	4000 to 8000	Double Wall Decoupled Region	7	7	77

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