2026国际腐蚀防护与应用大会
2026 International Conference on Corrosion Protection and Application
（ICCPA2026）
第一轮会议通知

中国·成都　2026.7.24-7.26

会议主题：绿色低碳 开放交流 合作共赢

腐蚀是世界各国共同面临的问题，给人类造成了巨大的损失。腐蚀导致了大量灾难性事故，耗竭了宝贵的资源与能源，污染了环境，对人类的生命安全、身体健康和生态平衡产生了重大危害。此外，腐蚀对国民经济的破坏也非常严重。据统计，全球每年因腐蚀导致的经济损失约占国民生产总值的 3%~5%，我国每年因腐蚀导致的经济损失约占我国 GDP 的 3.4%~5%，腐蚀问题已经成为影响国民经济和社会可持续发展的重要因素之一。随着高质量共建“一带一路”合作倡议的全面推进，加强全球腐蚀防护新技术、新材料研发应用，对于提升材料、装备服役寿命具有重要意义。

“2026 国际腐蚀防护与应用大会”定于 2026.7.24-7.26 在中国成都召开，以“绿色低碳 开放交流 合作共赢”为主题，邀请国内外知名专家、学者作主题报告，并邀请国内外学者及行业翘楚汇聚一堂，就腐蚀防护与应用领域的最新研究成果和业界动态进行广泛、深入地交流和探讨，推动腐蚀防护与应用学科的高质量发展。

西南技术工程研究所

2026 年 3 月

大会组织机构

1. 指导单位（排名不分先后）：

四川省科学技术协会

重庆市科学技术协会

2. 主办单位（排名不分先后）：

欧洲腐蚀联盟（EFC）

四川省腐蚀与防护学会

重庆市腐蚀与防护学会

西南技术工程研究所

3. 联合主办单位:（排名不分先后）：

中国工程物理研究院材料研究所

中国航发航空材料先进腐蚀与防护重点实验室

西北有色金属研究院

华北水利水电大学

西安交通大学

西南交通大学

西南石油大学

中国海洋大学

中国石油西南油气田分公司天然气研究院

东方方电气集团东方汽轮机有限公司清洁高效透平动力装备全国重点实验室

南昌航空大学

大连理工大学

河南省科学院化学研究所

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北京科技大学

广东腐蚀科学与技术创新研究院

中国科学院金属研究所

重庆理工大学

重庆交通大学

四川轻化工大学

航空防护涂层重点学科与技术研究中心

重庆市明月湖实验室

中国核学会钢系物理与化学分会

表面物理与化学重点实验室

北京大气环境材料腐蚀国家野外科学观测研究站

4. 承办单位：

Surface Science and Technology 编辑部

《表面技术》编辑部

重庆红智信信息技术有限公司

5. 协办单位：

材料腐蚀与防护四川省重点实验室

6. 支持单位：

考拉科创（北京）实验室科技有限公司

7. 支持媒体：

Surface Science and Technology（ESCI）

《表面技术》（EI）

《装备环境工程》

《包装工程》

《精密成形工程》

《工业工程设计》

“科工创享"融媒体平台

“考拉腐蚀”公众号

大会主题学术论坛

主题论坛一：极端环境下材料损伤与表面防护

国际论坛主席：

Tomas Prosek, UCT Prague

国内论坛主席：

李忠盛，西南技术工程研究所

论坛召集人：

丛大龙，西南技术工程研究所

宋凯强，西南技术工程研究所

论坛召集单位：

西南技术工程研究所

论坛议题：

1）极端环境下材料腐蚀行为与机理研究

2）运动构件耐磨耐蚀防护技术

3）极端环境下特种防护表面技术

4）智能表面防护材料与技术
5）极端环境下材料性能模拟测试与评价技术

主题论坛二：航空航天材料结构腐蚀防护与控制
国际论坛主席：
Theo Hack, former Airbus
国内论坛主席：
陆　峰，中国航发北京航空材料研究院
鞠鹏飞，航天八院 149 厂
于　美，北京航空航天大学
论坛召集人：
詹中伟，中国航发北京航空材料研究院
鞠鹏飞，航天八院 149 厂
于　美，北京航空航天大学
卞贵学，海军航空大学青岛校区
论坛召集单位：
中国航发航空材料先进腐蚀与防护重点实验室
航空防护涂层重点学科与技术研究中心
北京大气环境材料腐蚀国家野外科学观测研究站
论坛议题：
1）环境-工况耦合条件下材料结构腐蚀行为演化
2）先进表面防护与改性技术
3）高温/超高温防护涂层技术
4）面向外场使用的腐蚀维护维修技术
5）腐蚀智能监检测技术

主题论坛三：高活性材料的表面化学反应与腐蚀防护
国际论坛主席：
Herman Terryn, Vrije University
国内论坛主席：
赵晓冲，中国工程物理研究院材料研究所
论坛召集人：
刘　学，中国工程物理研究院材料研究所
论坛召集单位：
中国工程物理研究院材料研究所
表面物理与化学重点实验室
中国核学会钢系物理与化学分会
论坛议题：

1）高活性材料表面原位化学反应
2）高活性材料表面改性技术与环境相容性评价
3）高活性材料腐蚀机理与模拟计算
4）核材料与核电材料的腐蚀与防腐技术
5）面向高活性材料腐蚀防护的高性能涂层制备技术
6）极端环境下材料的腐蚀损伤与失效机制

主题论坛四：材料高温腐蚀及防护
国际论坛主席：
Juho Lehmusto, Abo Akademi University
国内论坛主席：
王少鹏，西北有色金属研究院
彭　晓，南昌航空大学
论坛召集人：
鲍泽斌，中国科学院金属研究所
汪　欣，西北有色金属研究院
论坛召集单位：
西北有色金属研究院
南昌航空大学
论坛议题：
1）金属及合金高温腐蚀机理。
2）热障/环境障涂层可控制备及服役性能
3）超高温环境材料高温服役行为及评价
4）核用材料高温腐蚀行为与防护设计
5）新型高温/热防护涂层研发与智能制造
6）燃料电池用高温结构材料及防护涂层使役行为

主题论坛五：先进功能性防腐防污涂层技术
国际论坛主席：
Patrick Keil, BASF
国内论坛主席：
李伟华，华北水利水电大学/河南省科学院
论坛召集人：
张瑞永，中国科学院海洋研究所
郑海兵，河南省科学院化学研究所
论坛召集单位：
华北水利水电大学
河南省科学院化学研究所

论坛议题：
1）金属腐蚀机制与寿命评估方法
2）严酷环境先进防腐涂层技术（重防腐涂层、自修复涂层等）
3）耐磨蚀材料及表界面防护技术
4）钢筋混凝土腐蚀机理与防护技术
5）先进电化学防护技术
6）海洋工程防污涂层技术

主题论坛六：可持续能源系统的腐蚀与防护
国际论坛主席：
Damien Ferón, CEA
国内论坛主席：
唐鋆磊，西南石油大学
赵景茂，北京化工大学
论坛召集人：
林　冰，西南石油大学
徐云泽，大连理工大学
论坛召集单位：
西南石油大学化学化工学院
论坛议题：
1）氢能材料与装备的腐蚀与防护
2）海洋能装备与关键材料的腐蚀与防护（风电、波浪能、潮汐能、温差能等）
3）太阳能材料与装备的腐蚀与防护（光伏/光热在海洋环境、炎热风沙环境、潮湿环境等）
4）碳基能源 CCUS 材料及装备的的腐蚀与防护（煤、石油、天然气生产与利用中的二氧化碳捕集、输送、封存系统）
5）新能源装备腐蚀在线监测技术（氢能、光伏/光热、风电、海洋能、CCUS 等）

主题论坛七：海洋材料腐蚀与防护
国际论坛主席：
Nicolas Larché, French Corrosion Institute
国内论坛主席：
崔洪芝，中国海洋大学
论坛召集人：
崔中雨，中国海洋大学
论坛召集单位：
中国海洋大学
论坛议题：
1）海洋材料腐蚀行为与机理

2）海洋材料环境敏感断裂
3）海洋耐蚀钢铁材料
4）轻合金海洋腐蚀与防护技术（镁合金、铝合金、钛合金）
5）先进防腐防污涂层材料与技术
6）海洋材料高能束表面改性技术
7）极地与深远海环境材料开发与适用性评价

主题论坛八：油气田腐蚀与防护
国际论坛主席：
Pavel Taraba, MERO
国内论坛主席：
文绍牧，中国石油西南油气田公司
周　理，中国石油西南油气田分公司天然气研究院
论坛召集人：
闫　静，中国石油西南油气田分公司天然气研究院
论坛召集单位：
中国石油西南油气田分公司天然气研究院
论坛议题：
1）油气田腐蚀失效及机理
2）油气田防腐材料研究与应用技术
3）油气田腐蚀监测检测技术
4）油气田腐蚀信息化智能化技术
5）油气田 CCUS-EOR/EGR 腐蚀防护技术

主题论坛九：能源装备服役安全智能监检测技术
国际论坛主席：
Vaclav Sefl, UCT Prague
国内论坛主席：
钟显康，西安交通大学
董泽华，华中科技大学
李秀峰，中国特种设备检测研究院
屈定荣，中石化安全工程研究院有限公司
论坛召集人：
徐云泽，大连理工大学
胡海军，西安交通大学
涂圣文，西安交通大学
论坛召集单位：
西安交通大学

大连理工大学

论坛议题：

1）油气、氢能、核电、光热、储能等能源装备腐蚀监检测技术
2）油气、氢能、核电、光热、储能等能源装备损伤、裂纹、断裂监检测技术
3）油气、氢能、核电、光热、储能等能源装备密封与泄漏监检测技术
4）油气、氢能、核电、光热、储能等能源装备运行参数风险监检测技术

主题论坛十：先进缓蚀剂技术

国际论坛主席：

Ingrid Milošev, Jožef Stefan Institute

国内论坛主席：

黄洪发，中国石油西南油气田分公司天然气研究院

论坛召集人：

陈　文，中国石油西南油气田分公司天然气研究院

论坛召集单位：

中国石油西南油气田分公司天然气研究院

论坛议题：

1）缓蚀剂研究（实验室中开发和测试缓蚀剂）
2）传统工业缓蚀剂防腐技术（现场缓蚀剂加注、加注后的效果监测/检测及优化等方面的研究和进展）
3）新能源缓蚀剂防腐技术（CCUS、地热、氢能等工业环境下的缓蚀剂防腐技术研究和进展）

主题论坛十一：能源动力装备磨蚀行为与防护技术

国际论坛主席：

Manel RODRIGUEZ RIPOLL, AC2T Research GmbH

国内论坛主席：

蔡振兵，西南交通大学
巩秀芳，东方电气集团东方汽轮机有限公司

论坛召集人：

王　伟，东方电气集团东方汽轮机有限公司
方修洋，西南交通大学

论坛召集单位：

西南交通大学
东方方电气集团东方汽轮机有限公司清洁高效透平动力装备全国重点实验室

论坛议题：

1）电力装备的磨蚀行为与防护技术
2）航空航天装备的的磨蚀行为与防护技术
3）核能装备的磨蚀行为与防护技术

4）增材制造技术在耐磨防护中的应用
5）能源动力装备的中涂层技术

青年科学家论坛
国际论坛主席：
Noémie Ott, Fachhochschule Ostschweiz
国内论坛主席：
吴　量，重庆大学/重庆市明月湖实验室
论坛召集人：
卢小鹏，东北大学
张　优，北京石油化工学院
谢治辉，西华师范大学
梅　迪，郑州大学
吴德权，西南技术工程研究所
论坛召集单位：
重庆大学
重庆市明月湖实验室

博士研究生/博士后快闪报告专场

为给腐蚀防护与应用领域的博士研究生/博士后搭建相互交流的学术平台，增加国内广大博士研究生/博士后与国际知名专家学者交流的机会，推进博士研究生/博士后创新思维和表达交流能力的培养。大会特别设置“博士研究生/博士后快闪报告”专场。专场将邀请国内外腐蚀防护领域专家担任评委，根据报告内容与表现评选出优秀快闪报告，并在大会开幕式上颁奖。欢迎广大博士研究生/博士后关注此论坛。

大会工作语言

中文、英文，大会会议现场配有同声传译。

大会征文

1.征文范围（包含但不限于各主题学术论坛议题）。

2.征文形式：**中英文摘要**或者**中英文全文**。

3.征文要求及出版事项：

1）论文应恪守出版伦理道德，并未在国内外学术期刊或会议公开发表过。

2）论文文件请保存为 Word 文档，以“ICCPA2026+作者姓名+单位+主题论坛序号”命名，论文模板请见附件二。

3）收稿类型：

①所有论文（摘要或者全文）经会议组委会评审后将收录至会议论文集，会议论文集不以任何形式公开发表（包括网络发表），仅供会议交流。

②为激励创新性研究，本次会议将评选优秀论文，并颁发证书。此外，经作者同意并修改完善后，将由组委会根据主题匹配度，向支持媒体期刊进行推荐发表。推荐论文将进入快速审稿通道，通过期刊正常评审后优先发表。

注：投稿的所有论文/摘要均需提供加盖第一著作权单位公章的“论文非涉密证明”，模板请见附件三。

4.投稿方式及时间节点：

1）投稿方式：

请登录会议网站 https://iccpa2026.scimeeting.cn/，点击“在线论文投稿”即可投稿。

2）时间节点：

论文投稿截止时间：2026-06-29。

5.其他请见附件一“征文通知”。

注册报名

会议报名：请登录会议网站https://iccpa2026.scimeeting.cn/注册、缴费。

代表类型	现场参会	
	早鸟价（2026.6.29 之前）	标准价
普通参会代表	￥2200 元	￥2500 元
EFC 会员	￥2000 元	￥2300 元
学生参会代表	￥1600 元	￥1900 元

备注：

1.本次会议的费用统一由“重庆红智信信息技术有限公司”开具“会议注册费”增值税发票。

2.会议期间食宿统一安排，费用自理。

大会日程安排

会议时间：

2026.7.24 注册报到、博士生/博士后快闪报告

2026.7.25 大会主旨报告

2026.7.26 大会主题学术论坛报告

大会联系方式

总负责人：胡琳盛 15823219738（微信同号）
会议征文：汪　潇 17783251550（微信同号）
电话：023-68792193
邮箱：wjqkbm@163.com

大会召集

大会联合主办单位（主题学术论坛召集单位）、协办单位、展览展示等正在火热召集中，有意向单位请联系大会总负责人胡琳盛详细洽谈（15823219738 微信同号）。

重要说明

此会议为非密学术交流会议，会议的报告、交流内容请不要涉及国家秘密、工作秘密、商业秘密。

附件一：2026国际腐蚀防护与应用大会

征文通知

2026国际腐蚀防护与应用大会将于2026.7.24-7.26在中国成都市召开，此次会议以“绿色低碳 开放交流 合作共赢”为主题，欢迎广大科研工作者投稿。

一、征文范围（包含但不限于以各主题学术论坛议题）：

分论坛	论文征集范围
论坛一：极端环境下材料损伤机理与表面防护	1）极端环境下材料腐蚀行为与机理研究 2）运动构件耐磨耐蚀防护技术 3）极端环境下特种防护表面技术 4）智能表面防护材料与技术 5）极端环境下材料性能模拟测试与评价技术
论坛二：航空航天材料结构腐蚀防护与控制	1）环境-工况耦合条件下材料结构腐蚀行为演化 2）先进表面防护与改性技术 3）高温/超高温防护涂层技术 4）面向外场使用的腐蚀维护维修技术 5）腐蚀智能监检测技术
论坛三：高活性材料的表面化学反应与腐蚀防护	1）高活性材料表面原位化学反应 2）高活性材料表面改性技术与环境相容性评价 3）高活性材料腐蚀机理与模拟计算 4）核材料与核电材料的腐蚀与防腐技术 5）面向高活性材料腐蚀防护的高性能涂层制备技术 6）极端环境下材料的腐蚀损伤与失效机制
论坛四：材料高温腐蚀及防护	1）金属及合金高温腐蚀机理。 2）热障/环境障涂层可控制备及服役性能。 3）超高温环境材料高温服役行为及评价。 4）核用材料高温腐蚀行为与防护设计。 5）新型高温/热防护涂层研发与智能制造。 6）燃料电池用高温结构材料及防护涂层使役行为
论坛五：先进功能性防腐防污涂层技术	1）金属腐蚀机制与寿命评估方法 2）严酷环境先进防腐涂层技术（重防腐涂层、自修复涂层等） 3）耐磨蚀材料及表界面防护技术 4）钢筋混凝土腐蚀机理与防护技术 5）先进电化学防护技术

	6）海洋工程防污涂层技术
论坛六：可持续能源系统的腐蚀与防护	1）氢能材料与装备的腐蚀与防护 2）海洋能装备与关键材料的腐蚀与防护（风电、波浪能、潮汐能、温差能等） 3）太阳能材料与装备的腐蚀与防护（光伏/光热在海洋环境、炎热风沙环境、潮湿环境等） 4）碳基能源 CCUS 材料及装备的的腐蚀与防护（煤、石油、天然气生产与利用中的二氧化碳捕集、输送、封存系统） 5）新能源装备腐蚀在线监测技术（氢能、光伏/光热、风电、海洋能、CCUS 等）
论坛七：海洋腐蚀防护	1）海洋材料腐蚀行为与机理 2）海洋材料环境敏感断裂 3）海洋耐蚀钢铁材料 4）轻合金海洋腐蚀与防护技术（镁合金、铝合金、钛合金） 5）先进防腐防污涂层材料与技术 6）海洋材料高能束表面改性技术 7）极地与深远海环境材料开发与适用性评价
论坛八：油气田腐蚀与防护	1）油气田腐蚀失效及机理 2）油气田防腐材料研究与应用技术 3）油气田腐蚀监测检测技术 4）油气田腐蚀信息化智能化技术 5）油气田 CCUS-EOR/EGR 腐蚀防护技术
论坛九：能源装备服役安全智能监检测技术	1）油气、氢能、核电、光热、储能等能源装备腐蚀监检测技术 2）油气、氢能、核电、光热、储能等能源装备损伤、裂纹、断裂监检测技术 3）油气、氢能、核电、光热、储能等能源装备密封与泄漏监检测技术 4）油气、氢能、核电、光热、储能等能源装备运行参数风险监检测技术
论坛十：缓蚀剂技术	1）缓蚀剂研究（实验室中开发和测试缓蚀剂） 2）传统工业缓蚀剂防腐技术（现场缓蚀剂加注、加注后的效果监测/检测及优化等方面的研究和进展） 3）新能源缓蚀剂防腐技术（CCUS、地热、氢能等工业环境下的缓蚀剂防腐技术研究和进展）
论坛十一：能源动力装备磨蚀行为与防护技术	1）电力装备的磨蚀行为与防护技术 2）航空航天装备的的磨蚀行为与防护技术

	3）核能装备的磨蚀行为与防护技术 4）增材制造技术在耐磨防护中的应用 5）能源动力装备的中涂层技术

二、征文要求

1.征文范围（包含但不限于各主题学术论坛议题）。

2.征文形式：中英文摘要或者中英文全文。

3.征文要求及出版事项：

1）论文应恪守出版伦理道德，并未在国内外学术期刊或会议公开发表过。

2）论文文件请保存为 Word 文档，以“ICCPA2026+作者姓名+单位+主题论坛序号”命名，论文模板请见附件二。

3）收稿类型：

①所有论文（摘要或者全文）经会议组委会评审后将收录至会议论文集，会议论文集不以任何形式公开发表（包括网络发表），仅供会议交流。

②为激励创新性研究，本次会议将评选优秀论文，并颁发证书。此外，经作者同意并修改完善后，将由组委会根据主题匹配度，向支持媒体期刊进行推荐发表。推荐论文将进入快速审稿通道，通过期刊正常评审后优先发表。

注：投稿的所有论文/摘要均需提供加盖第一著作权单位公章的“论文非涉密证明”，模板请见附件三。

三、投稿方式及时间节点：

1）投稿方式：

请登录会议网站 https://iccpa2026.scimeeting.cn/，进入投稿系统即可投稿。

2）时间节点：

论文投稿截止时间：2026-06-29。

四、联系方式

投稿联系人：汪潇

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附件二“论文模板”：

Layout guide for *Journal of Physics: Conference Series* using Microsoft Word

First Author [a], Second Author [b], Third Author [a,b]

[a] *First affiliation, Address, City and Postcode, Country*
b Second affiliation, Address, City and Postcode, Country

Abstract. All articles *must* contain an abstract.The abstract text should be formatted using 10 point Times or Times New Roman and indented 25 mm from the left margin. Leave 10 mm space after the abstract before you begin the main text of your article, starting on the same page as the abstract. The abstract should give readers concise information about the content of the article and indicate the main results obtained and conclusions drawn. The abstract is not part of the text and should be complete in itself; no table numbers, figure numbers, references or displayed mathematical expressions should be included. It should be suitable for direct inclusion in abstracting services and should not normally exceed 200 words in a single paragraph. Since contemporary information-retrieval systems rely heavily on the content of titles and abstracts to identify relevant articles in literature searches, great care should be taken in constructing both.

1. Introduction

These guidelines, written in the style of a submission to *J. Phys.: Conf. Ser.*, show the best layout for your paper using Microsoft Word. If you don’t wish to use the Word template provided, please use the following page setup measurements.

Margin	**A4 ONLY – DO NOT USE US LETTER**
Top	4.0 cm
Bottom	2.7 cm
Left	2.5 cm
Right	2.5 cm
Gutter	0 cm
Header	0 cm
Footer	0 cm

It is *vital* that you **do not add any headers, footers or page numbers to your paper**; these will be added during the production process at IOP Publishing (this is why the Header and Footer margins are set to 0 cm in table 1).

2. Formatting the title, authors and affiliations

Please follow these instructions as carefully as possible so all articles within a conference have the same style to the title page. This paragraph follows a section title so it should not be indented.

2.1. Formatting the title

The title is set 17 point Times Bold, flush left, unjustified. The first letter of the title should be capitalized with the rest in lower case. It should not be indented. Leave 28 mm of space above the title and 10 mm after the title.

2.2. Formatting author names

The list of authors should be indented 25 mm to match the abstract. The style for the names is initials then surname, with a comma after all but the last two names, which are separated by 'and'. Initials should not have full stops—for example **A J Smith** and *not***A. J. Smith**. First names in full may be used if desired. If an author has additional information to appear as a footnote, such as a permanent address or to indicate that they are the corresponding author, the footnote should be entered after the surname.

2.3. Formatting author affiliations

Please ensure that affiliations are as full and complete as possible and include the country. The addresses of the authors' affiliations follow the list of authors and should also be indented 25 mm to match the abstract. If the authors are at different addresses, numbered superscripts should be used after each surname to reference an author to his/her address. The numbered superscripts should *not* be inserted using Word's footnote command because this will place the reference in the wrong place—at the bottom of the page (or end of the document) rather than next to the address. Ensure that any numbered superscripts used to link author names and addresses start at 1 and continue on to the number of affiliations. Do not add any footnotes until all the author names are linked to the addresses. For example, to format

J Mucklow[1,3], J E Thomas[1,4] and A J Cox[2,5]

where there are three addresses, you should insert numbered superscripts 1, 2 and 3 to link surnames to addresses and then insert *footnotes* 4 and 5. Note that the first footnote in the main text will now be number 6.

*2.3.1. An example.*In this example we can see that there are footnotes after each author name and only 5 addresses; the 6th footnote might say, for example, 'Author to whom any correspondence should be addressed.' In addition, acknowledgment of grants or funding, temporary addresses etc might also be indicated by footnotes.

Spin dynamics in geometrically frustrated antiferromagnetic pyrochlores

J S Gardner[1,2,6], G Ehlers[3], S T Bramwell[4] and B D Gaulin[5]

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3. Formatting the text

The text of your paper should be formatted as follows:

- 11 point Timesor Times New Roman.
- The text should be set to single line spacing.
- Paragraphs should be justified.

- The first paragraph after a section or subsection heading should not be indented; subsequent paragraphs should be indented by 5 mm.

4. Sections, subsections and subsubsections

The use of sections to divide the text of the paper is optional and left as a decision for the author. Where the author wishes to divide the paper into sections the formatting shown in table 2 should be used.

4.1. Style and spacing

Table 2. Formatting sections, subsections and subsubsections.

	Font	Spacing
Section	11 point **Times bold**	1 line space before a section No additional space after a section heading
Subsection	11 point *Times Italic*	1 line space before a subsection No space after a subsubsection heading
Subsubsection	11 point *Times Italic*	Subsubsections should end with a full stop (period) and run into the text of the paragraph

4.2. Numbering

Sections should be numbered with a dot following the number and then separated by a single space:

- sections should be numbered 1, 2, 3, etc
- subsections should be numbered 2.1, 2.2, 2.3, etc
- subsubsections should be numbered 2.3.1, 2.3.2, etc

5. Footnotes

Footnotes should be avoided whenever possible. If required they should be used only for brief notes that do not fit conveniently into the text.

6. Figures

Each figure should have a brief caption describing it and, if necessary, a key to interpret the various lines and symbols on the figure.

6.1. Space considerations

Authors should try to make economical use of the space on the page; for example:

- avoid excessively large white space borders *around* your graphics;
- try to design illustrations that make good use of the available space—avoid unnecessarily large amounts of white space *within* the graphic;

6.2. Text in figures

Wherever possible try to ensure that the size of the text in your figures (apart from superscripts/subscripts) is approximately the same size as the main text (11 points).

6.3. Line thickness

In general, try to avoid extremely fine lines (often called 'hairline' thickness) because such lines often do not reproduce well when printed out—your diagrams may lose vital information when downloaded and printed by other researchers. Try to ensure that lines are no thinner than 0.25 pt. Note that some illustrations may reduce line thickness when the graphic is imported and reduced in size (scaled down) inside Microsoft Word.

6.4. Colour illustrations

You are free to use colour illustrations for the online version of *Journal of Physics: Conference Series* but any print version will only be printed in black and white **unless special arrangements have been made with your conference organizer for colour printing. Please check with the conference organizer whether or not this is the case.** If any print version will be black and white only, you should check your figure captions carefully and remove any reference to colour in the illustration and text. In addition, some colour figures will degrade or suffer loss of information when converted to black and white and this should be taken into account when preparing them.

6.5. Positioning figures

Individual figures should normally be centred but place two figures side-by-side if they will fit comfortably like this as it saves space. Place the figure as close as possible after the point where it is first referenced in the text. If there are a large number of figures it might be necessary to place some before their text citation. Figures should never appear within or after the reference list.

6.6. Figure captions/numbering

Captions should be below the figure and separated from it by a distance of 6 points—although to save space it is acceptable to put the caption next to the figure. Figures should be numbered sequentially through the text—'Figure 1', 'Figure 2' and so forth and should be referenced in the text as 'figure 1', 'figure 2',… and not 'fig. 1', 'fig. 2', ….

For captions not placed at the side of the figure, captions should be set to the width of the figure for wider figures, centred across the width of the figure, or, for narrow figures with wide captions, slightly extended beyond the width of the figure. The caption should finish with a full stop (period).

6.6.1. Examples. The following examples show how to format a number of different figure/caption combinations. ***Note that the table borders are shown as broken lines*** **for guidance only.**

Figure 3. Figure with short caption (caption centred).

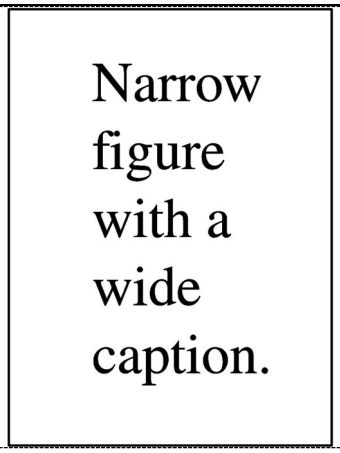

Figure 4. This is a figure with a caption that is wider than the actual graphic. To save space you can put the caption to the right of the figure by placing the graphic and justified caption in a table with one row and two columns.

Figure 5. In this case simply justify the caption so that it is as the same width as the graphic.

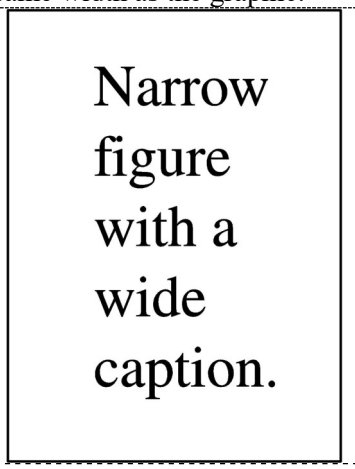

Figure 6. These two figures have been placed side-by-side to save space. Justify the caption.

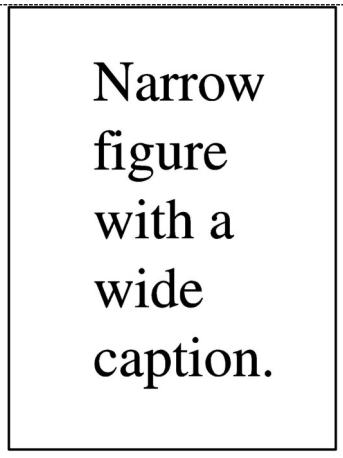

Figure 7. These two figures have been placed side-by-side to save space. Justify the caption.

6.7. Figures in parts

If a figure has parts these should be labelled as (a), (b), (c) etc on the actual figure. Parts should not have separate captions.

7. Tables

Note that as a general principle, for large tables font sizes can be reduced to make the table fit on a page or fit to the width of the text.

7.1. Positioning tables

Tables should be centred unless they occupy the full width of the text.

7.2. Tables in parts

If a table is divided into parts these should be labelled (a), (b), (c) etc but there should only be one caption for the whole table, not separate ones for each part.

7.3. Table captions/numbering

Tables should be numbered sequentially throughout the text and referred to in the text by number (table 1, **not** tab. 1 etc). Captions should be placed at the top of the table and should have a full stop (period) at the end. Except for very narrow tables with a wide caption (see examples below) the caption should be the same width as the table.

7.4. Rules in tables

Tables should have only horizontal rules and no vertical ones. Generally, only three rules should be used: one at the top of the table, one at the bottom, and one to separate the entries from the column headings. Table rules should be 0.5 points wide.

7.5. Examples

Because tables can take many forms, it is difficult to provide detailed guidelines; however, the following examples demonstrate our preferred styles.

Table 3. A simple table. Place the caption above the table. Here the caption is wider than the table so we extend it slightly outside the width of the table. Justify the text. Leave 6 pt of space between the caption and the top of the table.

Distance (m)	Velocity (ms^{-1})
100	23.56
150	34.64
200	23.76
250	27.9

7.5.1. More complex tables. The following is a slightly more complex table with a caption that is narrower than the table. Centre the caption across the width of the table. If it is difficult to make a table fit the page, use a smaller font. Headings should normally be in Roman (i.e., not bold or italic) type, have an initial capital and normally align left (but centred sometimes looks better); it is up to the author to choose a layout that is most useful to the reader. Columns of numbers normally align on the decimal point.

Table 4.A slightly more complex table with a narrow caption.

	Wake Chi Sqr. (N=15, df=1)	p	Stage 1 Chi Sqr. (N=15, df=1)	p	Stage 2 Chi Sqr. (N=15, df=1)	p
F3	1.143	0.285	0.286	0.593	0.286	0.593
Fz	1.143	0.285	0.067	0.796	0.067	0.796

C4	2.571	0.109	0.600	0.439	1.667	0.197

Table 5. A slightly more complex table with a caption that is the same width as the table. Simply place the caption inside a row at the top of the table and merge (combine) the cells together so that you have a single table cell the width of the table. Justify the caption.

	Wake Chi Sqr. (N=15, df=1)	p	Stage 1 Chi Sqr. (N=15, df=1)	p	Stage 2 Chi Sqr. (N=15, df=1)	p
F3	1.143	0.285	0.286	0.593	0.286	0.593
Fz	1.143	0.285	0.067	0.796	0.067	0.796
Cz	1.143	0.285	0.077	0.782	0.286	0.593

7.6. Notes to tables

If you wish to format a table so that it contains notes (table footnotes) to the entries within the body of the table and/or within the table caption, these notes should be formatted using alphabetic superscripts such as [a], [b], [c] and so forth. Notes within the table caption should be listed first. Notes should be placed at the bottom of the table; one convenient method is to create an empty row at the bottom of the table to contain them. Again, merge the cells to give you a single cell the width of the table. Table notes should be 10 point Times Roman. Each note should be on a separate line.

Table 6. A table with headings spanning two columns and containing notes[a].

Nucleus	Thickness (mg cm^{-2})	Composition	Separation energies , n (MeV)	, 2n (MeV)
^{181}Ta	19.3±0.1[b]	Natural	7.6	14.2
^{208}Pb	3.8±0.8[c]	99% enriched	7.4	14.1
^{209}Bi	2.6±0.01[c]	Natural	7.5	14.4

[a]Notes are referenced using alpha superscripts.
[b]Self-supporting.
[c]Deposited over Al backing.

8. Equations and mathematics

8.1. Fonts in Equation Editor (or MathType)

Make sure that your Equation Editor or MathType fonts, including sizes, are set up to match the text of your document.

8.2. Points of style

*8.2.1. Vectors. Bold italic characters is our preferred style but the author may use any standard notation; f*or example, any of these styles for vectors is acceptable:

'the vector cross product of $\boldsymbol{a}$ and $\boldsymbol{b}$ is given by $\boldsymbol{a} \times \boldsymbol{b}$ …', or
'the vector cross product of **a** and **b** is given by $\mathbf{a} \times \mathbf{b}$ …', or
'the vector cross product of $\vec{a}$ and $\vec{b}$ is given by $\vec{a} \times \vec{b}$ …'.

8.2.2. The solidus (⁄).A two-line solidus should be avoided where possible; for example, use

- $\dfrac{1}{\mathrm{M}_a}\left(\int_0^\infty \mathrm{d}\omega \dfrac{|S_0|^2}{N}\right)^{-1}$ instead of $\dfrac{1}{\mathrm{M}_a}\Big/\int_0^\infty \mathrm{d}\omega \dfrac{|S_0|^2}{N}$
- $\left(\dfrac{x^2+y^2}{x+y}\right)^{1/2}$ instead of $\sqrt{\left(\dfrac{x^2+y^2}{x+y}\right)}$.

8.2.3. Roman and italic in mathematics. Variables should be in italic; however there are some cases where it is better to use a Roman font:

- Use a Roman d for a differential d, for example, $\tan\theta = \mathrm{d}y/\mathrm{d}x$.
- Use a Roman e for an exponential e; for example, $y = \mathrm{e}^x$.
- Use a Roman i for the square root of –1; e.g., $\mathrm{i} = \sqrt{-1}$.
- Certain other common mathematical functions, such as cos, sin, det and ker, should appear in Roman type.
- Subscripts and superscripts should be in Roman type if they are labels rather than variables or characters that take values. For example in the equation

$$\varepsilon_m = -g\mu_\mathrm{n} Bm$$

m, the *z*component of the nuclear spin, is italic because it can have different values whereas n is Roman because it is a label meaning nuclear.

8.3. Alignment of mathematics

The preferred style for displayed mathematics in *Journal of Physics: Conference Series* is to centre equations; however, long equations that will not fit on one line, or need to be continued on subsequent lines, should start flush left. Any continuation lines in such equations should be indented by 25 mm.

Equations should be split at mathematically sound points, often immediately before =, + or – signs or between terms multiplied together. The connecting signs are not repeated and appear only at the beginning of the turned-over line. A multiplication sign should be added to the start of turned-over lines where the break is between two multiplied terms.

8.3.1. Small displayed equations: Some examples:

$$\phi_k(\vec{r}) = (2\pi)^{2/3} \exp\left(\mathrm{i}\vec{k}\cdot\vec{r}\right) \tag{1}$$

$$A^{(3/2)} = A^{(+)} - A^{(-)} \qquad (I = \tfrac{3}{2}) \tag{2}$$

However, if equations will fit on one line, do so; for example, (5) may also be formatted as:

$$C(12) = \left[\vec{\pi}(x)\cdot\vec{\phi}(x+r)\right] \approx 1 - \mathrm{const}\,\frac{r^2}{L^2}\int_r^L \frac{x\mathrm{d}x}{x^2} + \cdots \approx 1 - \mathrm{const}\,\frac{r^2}{L^2}\ln\left(\frac{L}{r}\right) + \cdots \tag{6}$$

8.3.2. Large display equations: examples. If an equation is almost the width of a line, place it flush left against the margin to allow room for the equation number.

$$Y(h\nu) = \frac{1}{q}\frac{(h\nu)^2}{[(h\nu_r)^2 - (h\nu)^2]^2 + (\hbar\Delta\omega_{1/2})^2(h\nu)^2}\int_{E\tau - E_V - \Delta\varphi}^{\infty} \frac{[E + (E_v - h\nu)]^{1/2}}{[E + (E_v - E_-)]^{1/2}}\frac{E}{\exp[(E - E_m)/kT] + 1}\mathrm{d}E \tag{7}$$

8.4. Miscellaneous points

- Exponential expressions, especially those containing subscripts or superscripts, are clearer if the notation $\exp(\ldots)$ is used, except for simple examples. For instance, $\exp\left[\mathrm{i}(kx-\omega t)\right]$ and $\exp\left(z^2\right)$ are preferred to $\mathrm{e}^{\mathrm{i}(kx-\omega t)}$ and e^{z^2}, but e^2 is acceptable. Similarly the square root sign $\sqrt{}$ should only be used with relatively simple expressions, e.g. $\sqrt{2}$ and $\sqrt{a^2+b^2}$, but in other cases the power $1/2$ should be used.
- It is important to distinguish between $\ln = \log_{\mathrm{e}}$ and $\lg = \log_{10}$.
- Braces, brackets and parentheses should be used in the following order: {[()]}. The same ordering of brackets should be used within each size. However, this ordering can be ignored if the brackets have a special meaning (e.g. if they denote an average or a function).
- Decimal fractions should always be preceded by a zero: for example 0.123 *not* .123 (note, do not use commas, use the decimal point).
- Equations that are referred to in the text should be numbered with the number on the right-hand side.

8.5. Equation numbering

Equations may be numbered sequentially throughout the text (i.e., (1), (2), (3),…) or numbered by section (i.e., (1.1), (1.2), (2.1) ,…) depending on the author's personal preference. In articles with several appendices equation numbering by section is useful in the appendices even when sequential numbering has been used throughout the main body of the text: for example, A.1, A.2 and so forth. When referring to an equation in the text, always put the equation number in brackets—e.g. 'as in equation (2)' or 'as in equation (2.1)'—and always spell out the word 'equation' in full, e.g. 'if equation (5) is factorized'; do not use abbreviations such as 'eqn.' or 'eq.'.

9. Appendices

Technical detail that it is necessary to include, but that interrupts the flow of the article, may be consigned to an appendix. Any appendices should be included at the end of the main text of the paper, after the acknowledgments section (if any) but before the reference list. If there are two or more appendices they should be called appendix A, appendix B, etc. Numbered equations should be in the form (A.1), (A.2), etc, figures should appear as figure A1, figure B1, etc and tables as table A1, table B1, etc.

10. References

As part of the production system for *Journal of Physics: Conference Series*, online versions of all reference lists will, wherever possible, be linked electronically using CrossRef. **It is*vitally* important for all the references to be accurate and to be carefully formatted using the guidelines below, otherwise delays may be incurred and the references may not link through CrossRef**.

A complete reference should provide the reader with enough information to locate the article concerned, whether published in print or electronic form, and should, depending on the type of reference, consist of:

- name(s) and initials;
- date published;
- title of journal, book or other publication;
- titles of journal articles may also be included (optional);
- volume number;
- editors, if any;
- town of publication and publisher in parentheses for *books*;
- the page numbers.

For *Journal of Physics: Conference Series*, please use the Vancouver numerical system where references are numbered sequentially throughout the text. The numbers occur within square brackets, like this [2], and one number can be used to designate several references. The reference list gives the references in numerical, not alphabetical, order.

Points to note

- There should be a 5 mm gap between the reference number (e.g., '[8]') and the start of the reference text. Second and subsequent lines of individual references should be indented by 5 mm. For example:

[1] Aderhold J, Davydov V Yu, Fedler F, Klausing H, Mistele D, Rotter T, Semchinova O, Stemmer J and Graul J 2001 *J. Cryst. Growth* **222** 701

- the authors should be in the form surname (with only the first letter capitalized) followed by the initials with no periods after the initials. Authors should be separated by a comma except for the last two which should be separated by 'and' with no comma preceding it.
- The article title (if given) should be in lower case letters, except for an initial capital, and should follow the date.
- The journal title is in italic and is abbreviated. If a journal has several parts denoted by different letters the part letter should be inserted after the journal in Roman type, e.g. *Phys. Rev.* A.**Please do not join the part letter to the volume number in bold type.**
- Both the initial and final page numbers should be given where possible. The final page number should be in the shortest possible form and separated from the initial page number by an en rule '– ', e.g. 1203–14, i.e. the numbers '12' are not repeated.
- References to printed journal articles. A normal reference to a journal article contains three changes of font (see table 6).

Table 6. Font styles for a reference to a journal article.

Element	Style
Authors, date	Roman type
Article title (optional)	Roman type
Journal title	Italic type
Volume number	Bold type
Page numbers	Roman type

Here are some examples taken from published papers:

[1] Strite S and Morkoc H 1992 *J. Vac. Sci. Technol.* B **10** 1237
[2] Nakamura S, Senoh M, Nagahama S, Iwase N, Yamada T, Matsushita T, Kiyoku H and Sugimoto Y 1996 *Japan. J. Appl. Phys.* **35** L74

10.1.1. References to preprints. For preprints there are two distinct cases:

1. Where the article has been published in a journal and the preprint is supplementary reference information. In this case it should be presented as:

[1] Kunze K 2003 T-duality and Penrose limits of spatially homogeneous and inhomogeneous cosmologies *Phys. Rev.* D **68** 063517 (*Preprint* gr-qc/0303038)

2. Where the only reference available is the preprint. In this case it should be presented as

[1] Milson R, Coley A, Pravda V and Pravdova A 2004 Alignment and algebraically special tensors *Preprint* gr-qc/0401010

10.1.2. References to electronic-only journals. In general article numbers are given, and no page ranges, as most electronic-only journals start each article on page 1.

- For SISSA journals the volume is divided into monthly issues and these form part of the article number

[1] Horowitz G T and Maldacena J 2004 The black hole final state *J. High Energy Phys.* JHEP02(2004)008

10.1.3. References to books, conference proceedings and reports. References to books, proceedings and reports are similar to journal references, but have only two changes of font (see table 7).

Table 7. Font styles for references to books, conference proceedings and reports.

Element	Style
Authors, Date	Roman type
Book title	Italic type
Editors	Roman type
Place (city, town etc) of publication, publisher	Roman type
Volume, page number	Roman type

Points to note

- Book titles are in italic and should be spelt out in full with initial capital letters for all except minor words. Words such as Proceedings, Symposium, International, Conference, Second, etc should be abbreviated to *Proc.*, *Symp.*, *Int.*, *Conf.*, *2nd*, respectively, but the rest of the title should be given in full, followed by the date of the conference and the town or city where the conference was held. For Laboratory Reports the Laboratory should be spelt out wherever possible, e.g. *Argonne National Laboratory Report*.
- The volume number, for example vol 2, should be followed by the editors, in a form such as ‘ed A J Smith and P R Jones’. Use *et al* if there are more than two editors. Next comes the town of publication and publisher, within brackets and separated by a colon, and finally the page numbers preceded by p if only one number is given or pp if both the initial and final numbers are given.

Examples taken from published papers:

[1] Sze S M 1969 *Physics of Semiconductor Devices* (New York: Wiley–Interscience)
[2] Dorman L I 1975 *Variations of Galactic Cosmic Rays* (Moscow: Moscow State University Press) p 103
[3] Caplar R and Kulisic P 1973 *Proc. Int. Conf. on Nuclear Physics (Munich)* vol 1 (Amsterdam: North-Holland/American Elsevier) p 517

[4] Szytula A and Leciejewicz J 1989 *Handbook on the Physics and Chemistry of Rare Earths* vol 12,ed K A Gschneidner Jr and L Erwin (Amsterdam: Elsevier) p 133
[5] Kuhn T 1998 Density matrix theory of coherent ultrafast dynamics *Theory of Transport Properties of Semiconductor Nanostructures(Electronic Materials* vol 4*)*ed E Schöll (London: Chapman and Hall) chapter 6 pp 173–214

10.2. Reference lists

Up to ten authors may be given in a particular reference; where there are more than ten only the first should be given followed by *et al*. Abbreviations of the names of periodicals used by IOP Publishing are usually the same as those given in British Standard BS 4148: 1985. If an author is unsure of an abbreviation it is best to leave the title in full. The terms *loc. cit.* and *ibid* should not be used.

Unpublished conferences and reports should generally not be included in the reference list and articles in the course of publication should be entered only if the journal of publication is known. A thesis submitted for a higher degree may be included in the reference list if it has not been superseded by a published paper and is available through a library; sufficient information should be given for it to be traced readily.

Acknowledgments

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附件三“论文非涉密证明”：

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兹证明，由（XXXXXXX）（作者的单位和姓名）提交的文章《XXXXXXX》（文章题目），全部内容经过保密审查，不涉及国家秘密、工作秘密、商业秘密，同意在 XXXX 会议公开发表。

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单位(盖章)：

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