

2017



北京大学应用物理与技术研究中心

Center for Applied Physics and Technology, Peking University

高能密度物理数值模拟教育部重点实验室

**Key Laboratory of High Energy Density Physics Simulations,
Ministry of Education**

CAPT



中心成立九年来，在高能量密度物理研究领域获得了一定的国际影响力，向中国工程物理研究院及有关单位输送了二十余名优秀的博士毕业生，这一系列成果都与北京大学和工程物理研究院的大力支持，以及中心师生的辛勤付出是分不开的。值此中心成立十周年之际，我代表应用物理与技术研究中心向关心中心建设发展的各方领导及中心全体师生表示衷心的感谢！祝愿中心在未来十年取得更加辉煌的成绩，在国际学术领域和人才培养等方面为国家做出更大的贡献！

——贺贤土

应用物理与技术研究中心




北京大学应用物理与技术研究中心（Center for Applied Physics and Technology，简称CAPT）成立于2007年12月23日，由著名物理学家贺贤土院士担任主任。

中心的宗旨是：努力开展面向国家重大需求（如激光惯性约束聚变等）的应用基础研究，并积极探索高能量密度物理等领域挑战性的若干科学前沿问题，积极开展国内外学术交流，培养和训练一批具有创新能力和奉献精神的优秀人才。目前的主要研究方向包括：高能量密度凝聚态物理（包括温稠密物质物理等）、新材料探索和模拟设计、强激光作用下原子物理、强场下高能带电粒子加速物理、激光等离子体物理、可压缩流体湍流和流体力学不稳定性现象、计算科学等。

中心现有59名研究人员，来自北京大学工学院、物理学院、数学科学学院以及国家重点研究院（所）。其中包括中国科学院院士5人、“长江学者”特聘教授6人、“国家杰出青年科学基金”获得者14人、“新世纪优秀人才培养计划”获得者4人、“千人计划”获得者2人、“青年千人计划”获得者2人。此外，中心还有一支优秀的年轻学生和博士后队伍。

中心承担了高能量密度物理研究相关的重大研究课题约70项，取得了一批高水平研究成果，发表在Nature Physics, Nature Communication, Proceedings of the National Academy of the Sciences of the United States of America, Physical Review Letters, Nano Letters, Advanced Materials, Journal of Fluid Mechanics等相关领域顶级期刊。成立九年来，发表SCI学术论文900余篇，仅Physical Review Letters上，就已发表学术论文30余篇。

中心已经成为我国在高能量密度物理领域的主要研究基地之一，在国际学术界有较大影响。在中心基础上，获教育部批准成立了高能量密度物理数值模拟教育部重点实验室、工程应用基础技术基地（北京大学）、教育部惯性聚变科学与应用（IFSA）协同创新中心北京大学分中心等。中心主办系列的“高能量密度物理国际会议”和前沿学术研讨活动、讲习班等，促进国内外学者交流合作，着力提升我国在国际学术界的地位。



主任寄语

在国家大力推动科技发展的背景下，北京大学与中国工程物理研究院开展了深入的实质性合作，于2007年12月成立了北京大学应用物理与技术研究中心（Center for Applied Physics and Technology, CAPT）。这是一个名牌大学与国家重点研究院（所）合作研究和培养年轻科学家的组织，这种模式在国内是一种尝试。大学的优势是人才资源丰富，学术思想活跃；研究所的优势是专业力量强，研究设备精良。因此，互相合作可以优势互补，有利于科学和技术的源头创新。

中心的宗旨是：努力开展面向国家重大需求（如激光惯性约束聚变等）的应用基础研究，并积极探索具有挑战性的高能量密度物理等若干科学前沿问题；积极开展国内外学术交流，培养和训练一批具有创新能力和奉献精神的优秀人才。

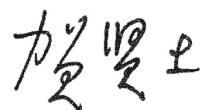
中心主要研究方向：高能量密度物质科学、新材料探索和模拟设计、强激光作用下原子物理、强场下高能粒子加速物理、激光等离子体物理、可压缩流体湍流和流体力学不稳定性现象、计算科学等。中心大力提倡“学术民主、积极交流、畅所欲言、思想创新”的治学思维，形成学术争论的气氛，鼓励成员学术创新；通过全体学术活动、国内外专家学术报告、博士后博士生自己组织学术活动等，推动合作交流与创新。

目前中心成员包括中国科学院院士5人、“长江学者”特聘教授6人、“国家杰出青年科学基金”获得者14人、“新世纪优秀人才培养计划”获得者4人、“千人计划”获得者2人、“青年千人计划”获得者2人。其中，专职研究人员4名，北京大学客座教授1名，来自北京大学工学院、物理学院、数学学院的兼职研究人员27名，中国工程物理研究院的兼职研究人员26名，以及1名外籍短期千人兼职研究员，形成了一支优秀的人才队伍。中心完成了大量重大研究课题，取得了一批高水平研究成果，发表了学术论文900余篇，其中很多发表在Nature Physics, Nature Communication, Proceedings of the National Academy of the Sciences of the United States of America, Physical Review Letters, Nano Letters, Advanced Materials, Journal of Fluid Mechanics等顶级期刊上。

目前，中心已经成为我国在该方面研究的主要基地之一，在国际学术界有较大影响。在中心基础上，还获批成立了高能量密度物理数值模拟教育部重点实验室、工程应用基础技术基地（北京大学）、教育部惯性聚变科学与应用（IFSA）协同创新中心北京大学分中心。

中心主办系列的“高能量密度物理国际会议”和前沿学术研讨活动、讲习班等，促进国内外学者交流合作，提升了我国在国际学术界的地位。

中心在相关学科和方向上招收博士研究生和博士后，并招聘国内外优秀研究专家。中心热忱欢迎有志于高能量密度科学研究的优秀学生和青年学者，加入我们这个集体，为学术前沿创新和国家科技进步贡献力量！



中国科学院院士
理论物理学家
应用物理与技术研究中心主任

CAPT

Center for Applied Physics and Technology

The Center for Applied Physics and Technology (CAPT) was founded on December 23, 2007, chaired by Academician Xian-Tu He, a renowned theoretical physicist.

The missions of CAPT are as follows:

To substantiate the fundamental researches for national major demands such as laser inertial confinement fusion;

To probe into challenging scientific research frontiers including high energy density physics;

To promote academic interactions both domestic and international; and

To train and educate devoted and innovative young scientists.

Fifty-nine researchers include :

Five members of Chinese Academy of Sciences

Six Cheung Kong Scholars

Fourteen Distinguished Young Scholars

Four Recipients of the New Century Excellent Talents

Two recipients of Thousand Talent Program

Two recipients of Youth Thousand Talent Program

Some recent research topics of CAPT are as follows:

Properties of the non-ideal plasmas, especially the warm dense matter, under conditions of high energy density;

The exploration and computational design of new materials with novel properties;

Atomic physics with intense lasers and acceleration physics of energetic charged particles under strong fields;

Hydrodynamic instabilities and compressible turbulence; and

Scientific computing relevant to the above subjects.

CAPT has carried out about seventy research projects in the field of high energy density physics, and published about nine hundred papers since 2007. Many of them appeared in leading journals such as Nature Physics, Nature Communications, Proceedings of the National Academy of Sciences of the United States of America, Physical Review Letters, Nano Letters, Advanced Materials, Journal of Fluid Mechanics, etc. In Physical Review Letters alone, CAPT members have published more than thirty papers.

CAPT has now become one of the major research centers on high energy density physics in China, and caught attention among the international academic community. Based on CAPT, we have been approved to establish the Ministry of Education Key Laboratory of High Energy Density Physics Simulations, the Research Base of Fundamental Science and Technology, and Peking University Branch of Collaborative Innovation Center of IFSA. CAPT hosted International Conference on High Energy Density Physics, as well as many research workshops and symposiums. These activities offer opportunities to promote interactions among domestic and international scientists, and the impact of China researchers.

Words from the Director

In line with the national trend of aggressively promoting science and technology, the Center for Applied Physics and Technology (CAPT) at Peking University was established in December, 2007.

CAPT advocates a democratic academic atmosphere, active interactions, freedom in expressing ideas, and innovative thoughts. Through efforts in the past nine years, we have formed an excellent research team, comprised of four full time faculty members, one Peking University guest professor, twenty seven adjunct Peking University professors from the College of Engineering, School of Physics, and School of Mathematical Sciences, twenty six adjunct researchers from China Academy of Engineering Physics, and one foreign recipient of the Thousand Talent Program. Among them, there are five members of Chinese Academy of Sciences, six Cheung Kong Scholars, fourteen recipients of China National Funds for Distinguished Young Scientists, four recipients of the New Century Excellent Talents in University, two recipients of Thousand Talent Program and two recipients of Youth Thousand Talent Program.

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One of the missions for CAPT is to foster young researchers, who will become the energetic momentum for advancing future science and technology. CAPT offers graduate programs on research topics of high energy density material sciences, the exploration and computational design of new materials with novel properties, atomic physics with intense lasers, acceleration physics of energetic charged particles under strong fields, hydrodynamic instabilities and compressible turbulence, and scientific computing relevant to the above subjects.



Member of Chinese Academy of Sciences
Theoretical Physicist
Director of CAPT



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