

力学博士后流动站

MECHANICS POSTDOCTORAL FELLOWS PROGRAMME

西北工业大学力学博士后流动站是 1985 年国家首批建立博士后科研流动站的单位之一。下设“一般力学与力学基础”、“固体力学”、“流体力学”、“工程力学”四个二级学科。其中固体力学为国家重点学科，一般力学与力学基础为国防科工委重点学科，工程力学为陕西省名牌专业，上述三个二级学科均为“211”和“985”工程重点建设学科。力学博士后流动站经过 28 年的发展，在人才培养，学科建设，学术研究等多个领域取得长足进步。设站至今，累积招收博士后人数 58 人，目前在站人数 10 人，近 3 年累积招收博士研究生 100 余名，已经形成了一个结构合理的科研教学骨干梯队。

The Mechanics Postdoctoral Fellows Programme (M-PFP) of Northwestern Polytechnical University (NPU) is known among the earliest of its kind the central government established in 1985. It comprises 4 sub-disciplines, i.e. General Mechanics and Mechanics Basics, Solid Mechanics, Fluid Mechanics, and Engineering Mechanics. Solid Mechanics is a discipline of national importance, General Mechanics and Mechanics Basics is a key discipline of CSTIND (Commission of Science, Technology and Industry for National Defense). Engineering Mechanics is a famous discipline of provincial importance. The above 3 sub-disciplines are classified as 211/985 Program key disciplines. Since 28 years ago, M-PFP has achieved very great progress in multiple fields, e.g. talent development, discipline development and academic research. 58 postdoctoral fellows have been enrolled since, including 10 residents. Over the past 3 years, above 100 doctoral students have been enrolled, contributing to the formation of a reasonably-structured core team of researchers and instructors.

一、主要研究方向

I. Main Research Orientation

流体力学、固体力学、一般力学与力学基础、工程力学、流固耦合与控制。

The main research orientations include fluid mechanics, solid mechanics, general mechanics and mechanics basics, engineering mechanics, and fluid-solid coupling & solids control.

二、科研成果：

II. Scientific Achievements

近五年来，学科成员主持及参加国家（国防）863、国家自然科学基金（重大、重点、面上）及国防科工委、总装备部重大国防预研项目，各类航空航天院所的型号任务，横向合作项目 150 余项，2004~2008 年度，实际科研经费到款达总计 4390 多万元。其中李玉龙教授负责主持的 xx 专项“固定翼民用飞机抗鸟撞结构设计分析、试验验证”及与 212 所合作的“引信/目标加速与回收系统”两个项目经费突破千万，目前进展顺利。在国内外重要期刊及学术会议发表论文 350 余篇，其中被 SCI 收录 40 余篇，EI 收录 130 余篇，出版教材及专著 2 部，获批国家专利 9 项，软件著作权 1 项，获省部级科研奖励 7 项。

In the past five years, M-PFP staff have led or participated in more than 150 preliminary research projects of defense importance relevant to all types of 863 Defense Program, NNSF programmes (1st Importance, 2nd Importance and 3rd Importance), CSTIND programmes, General Armament Department programmes and aerospace equipment programmes. Actual spending on research between 2004 and 2008 came up to ¥43.9M+. Under smooth progress are two research programmes, i.e. Bird Strike Protection Structure Design, Analysis, Experiment and Validation for Fixed Wing Civil Aircraft (led by Prof. Li Yulong), and Fuse/Target Acceleration & Recovery System (a cooperation programme with Institute 212). More than one million yuan have been invested in the two programmes. On important Chinese or international journals and at academic workshops M-PFP have published 350+ papers, including 40+ collected by SCI and 130+ by EI. Besides, M-PFP have published 2 textbooks and treatises and have been granted 9 national patents, 1 software copyright and 7 provincial-and ministerial-level prizes.

依托良好的科研条件，博士后研究人员在各自科研岗位上作出积极的业绩，博士后人员申获各类基金人次明显提高，据统计，自 2006 年以来申获国家自然科学基金项目数量 5 项，省（部）级研究基金 2 项，获批中国博士后科学基金 6 项，其中一等资助和二等资助各 3 项，总项数 13 项，累计科研经费总额达 263 万。同期博士后研究人员参与其他国家级及省（部）级科研项目达 14 项，科研经费总计达 1004 万，发表高水平科研论文 23 篇，其中 SCI 收录 8 篇，EI 收录 15 篇。

With its favorable conditions, M-PFP enables the postdoctoral fellows to make great achievements in their fields. There is a remarkably rising number of fund applications. According to the statistics, since 2006, M-PFP have acquired 5 NNSF

grants, 2 provincial or ministerial research grants, and 6 China Postdoctoral Science Foundation (CPSF) grants which consist of three first-level grants and three second-level grants. In total the 13 grants amount to ¥2.63M. M-PFP have participated together with other national, provincial or ministerial departments in 14 other programmes, which involve ¥10.04M in grant and 23 excellent academic papers, 8 of which were collected by SCI and 15 by EI.

三、科研条件

III. Research Platforms

学科条件一流，试验设施先进，建有“国家工科力学教学基地和国家级实验教学示范中心”，在原有的“动力学与强度”国家专业实验室基础上，2007 年获批“飞行器结构力学与强度技术”国防重点学科实验室。先后获得世界银行贷款、211 工程一、二、三期，985 工程一期、二期等建设项目资助，目前实验室固定资产折合人民币 3500 余万元，引进配备了一批国内一流、国际先进的科研设施，包括先进的多通道协调加载系统，系列化的材料疲劳试验机、系列化的 Hopkinson 杆测试系统、超高速相机、可加载真空扫描电子显微镜、大吨位电动振动台、激光扫描测振系统、大型复杂结构模态测试分析系统等进口先进仪器设备。

M-PFP has top-quality academic platforms and advanced experiment facilities, such as the National Engineering Mechanics Faculty Base and National Experiment & Education Demonstration Center. In addition to the honor as the National Laboratory of Dynamics and Strength, M-PFP was approved in 2007 as a key defense discipline laboratory specializing in Structural Mechanics and Strength Technology. Besides, it has obtained World Bank loans as well as grants from 211 Program (Phase 1, Phase 2 and Phase 3) and 985 Program (Phase 1 and Phase 2). M-PFP laboratory fixed assets are worth a total of ¥35M+. The laboratories are provided with a lot of science equipment known to be leading at home or advanced globally, including the multichannel synchro loading system, material fatigue tester series, split Hopkinson pressure bar tester series, ultra-high speed camera, loadable scanning electron microscope, large-tonnage electrodynamic vibration generator, laser scanning vibrometer, and modal test & analysis system for large complicated structures.

建有结构完整性试验与分析研究室、飞行器结构坠撞与冲击动力学研究室、飞行器结构动力学研究室、飞行器结构材料失效过程研究室和智能材料与结构动力学研究室等 5 个专业研究室，研究方向紧扣国防科技相关前沿领域，特色鲜明。重点研究方向有：冲击动态失效分析、验证与航空结构抗冲击设计技术研究，新

型材料/结构的细观力学行为分析与本构关系研究，飞机气动弹性力学与结构动力学分析与控制，飞机轻质金属结构与复合材料结构的损伤容限设计分析。

M-PFP has 5 remarkably special laboratories oriented to fields related to frontier defense technology. These are the Structural Integrity Testing & Analysis Laboratory, the Air Vehicle Structural Crashworthiness and Impact Dynamics Laboratory, the Air Vehicle Structural Dynamics Laboratory, the Air Vehicle Structural Material Failure Process Laboratory, and the Smart Material and Structural Dynamics Laboratory. They are oriented primarily to such fields of research as impact dynamic failure analysis, validation and impact-resistant aeronautic structure design; mesomechanical behavioral analysis and constitutive relation analysis for new materials and structures; aircraft aeroelastic mechanics & structural dynamics analysis and control; and aircraft damage tolerance design for light metallic structures and composite material structures.

四、学术队伍及带头人

IV. Academic Team and Lead Researchers

本站拥有一支学术思想活跃、年龄结构合理、综合素质优良的实力雄厚的学术队伍。目前流动站在职副高以上人员 72 人，其中院士 2 人（两名双聘院士），教授 32 人；长江特聘教授 3 人；长江讲座教授 1 人；国家有突出贡献专家 2 人，教育部新世纪（跨世纪）优秀人才 2 人。

CTE-PFP is supported by an enthusiastic and powerful academic team of reasonable age structure and fine overall qualities. It is proud of 72 senior associates or higher, including 2 CAS/CAE academicians (both of whom are dual-employed), 32 professors, 3 Changjiang scholars, 1 professors-lecturer, 2 specialists with outstanding contributions to China, and 2 MOE Epoch-making (New Century) Most-talented scholars.

五、招收计划

V. Enrollment Programme

每年招收博士后研究人员 15 人左右。

Every year around 15 postdoctoral fellows are enrolled.