附件

2025年度"上海伙伴科研计划"拟立项项目清单

序号	项目名称	承担单位
1	Gravitational Wave Background as a Probe of Early Universe	同济大学
2	Quantum electrodynamics of Photonic Time Crystals	同济大学
3	Symmetries and Invariants in Discrete Mathematics	华东理工大学
4	高粘度条件下温敏磷光示踪粒子生成的微流控通道几何形状的AI驱动优化	上海交通大学
5	Applications of Nonnegative Cross-Curvature to the Screening Problem and to Mechanism Design	复旦大学
6	Bridging Holography, Black Holes, and Non-Hermitian Physics	上海大学
7	entropy and invariant measures of topological amenable groups actions	复旦大学
8	有机铁电薄膜晶体管铁电极化与界面电荷协同调控机制研究	复旦大学
9	Laser-Plastic Interaction and Pyrolysis (LPIP)	中国科学院上海光学精密机械研究所
10	NuGenesis: Neutrinos as Windows into the Early Universe	上海李政道研究所
11	Photon-Induced Self-ordering and Crystallization of a Fermi Gas	华东师范大学
12	人工智能辅助多参数优化在超快激光驱动气体靶产生高次谐波和太赫兹辐射中的应用	上海理工大学
13	Multi-configurable Active Matter	同济大学
14	气候风险应对及再保险优化	东华大学
15	Asymptotics of switching Brownian motions and hybrid switching diffusions	东华大学
16	AI Powered Inverse Design of Structures under Fluid Loads	复旦大学

序号	项目名称	承担单位
17	Optimal Clinical Trial Design in Heterogeneous Populations	华东师范大学
18	Dark Matter and Cosmology from beyond visible dimensions	上海李政道研究所
19	Symmetry-resolved Entanglement in Holography	上海数学与交叉学科研究院
20	A Dynamic Model for Turbulent Bubbly Flows in Ship Design	上海交通大学
21	Finite-Time Adaptive Control for Stochastic and Uncertain Systems	菲数（上海）科技有限公司
22	基于生命周期理论的养老社区最优设计研究	华东师范大学
23	Development of radon detection and mitigation techniques for next-generation rare-event physics experiments	上海李政道研究所
24	Towards Data-efficient Learning on AIoT Devices	东华大学
25	Design and Analysis of Rate-Splitting Code-Domain Multiple Access	上海科技大学
26	Knowledge-Guided and Reinforcement Learning-Driven Optimization for Battery Analytics and Hydrogen-Integrated Energy Systems	上海交通大学
27	Test-Time Scaling for Reliable and Efficient AI	复旦大学
28	Wireless In-Motion Charging for Energy-Aware Humanoid Robots	上海交通大学
29	臭氧辅助化学刻蚀制备微纳结构晶体硅薄膜及其光电化学应用研究	东华大学
30	轻量化视频世界模型建模方法研究（Towards Lightweight Video World Models）	复旦大学
31	数据重合成驱动的端侧智能体安全与效能协同优化研究	华东师范大学
32	中红外光学路由超表面结构	上海交通大学
33	From PSG to Wristband: Transfer Learning for Early Dementia Risk Stratification and Prognosis Using Wearable Nocturnal Physiology	复旦大学
34	Virtual AI Agents as Empathic Mediators for Addressing Aging and Low Fertility: A Cross-Cultural Study between Korea and China	上海工程技术大学

序号	项目名称	承担单位
35	融合LLM推理与混合智能的不定期船韧性调度研究	上海海事大学
36	AI-Empowered, Data-Driven, and Mobile Crowdsensing-Based Seamless 3D Indoor Positioning for Contextually and Spatially Aware AI Agents	上海大学
37	Low-Effort Neural Control Interfaces for Dexterous In-Hand Manipulation in Wearable Robotics	上海大学
38	On the Complexity of Adversarial Training	上海财经大学
39	Title: Market-Implied Policy Support in China: Option-Based Inference Across Segmented Markets	菲数（上海）科技有限公司
40	需求响应式公交的重复性需求分析与网络优化框架研究（An Integrated Framework of Repetitive-demand Analysis and Network Optimization for Demand Responsive Transit）	上海理工大学
41	Silicon Lifetime Management Framework for In-Memory Computing Architecture	上海交通大学
42	人工智能与领域知识融合的颠覆性技术预测前沿研究	东华大学
43	应用于室内能量收集的钙钛矿光伏技术研究	复旦大学
44	Model based Architecture for Next Generation Video Coding	上海海事大学
45	Autonomous Drone-BIM Inspection of Window-to-Wall Interfaces on Residential Façades with Multimodal AI-Driven Defect Mapping and Compliance Reporting	同济大学
46	An Experimental Study on Agile Innovation for Next-Generation Mobility	同济大学
47	用于食品安全与个人健康监测的智能可穿戴传感与电子平台	上海理工大学
48	Tyre Rubber Emission, Assessment and Distribution- support for Microplastic Action and Policy (TREAD-MAP)	上海海洋大学
49	上海城市气候风险分析工作流开发 Development of a Workflow for Analyzing Urban Climate Risks in Shanghai	复旦大学
50	Estimation of agronomic and environmental parameters in biochar produced by pilot-scale hydrothermal carbonization (HTC) using near-infrared reflectance spectroscopy (NIRS) and artificial intelligence	同济大学
51	Response of river wetland evolution to Holocene climate change: implications for management and restoration	华东师范大学
52	Identification of Micro & Nanoplastic Accumulation Hotspots in Commonly Consumed Vegetables	上海大学

序号	项目名称	承担单位
53	Physicochemical Simulation of Salinity-Nutrient-Metal Coupling Processes and Vegetation Response Mechanisms in Coastal Environments	同济大学
54	AI-driven modelling and mapping for urban environmental comfort and skilled talent attraction	华东师范大学
55	AI-Driven Analysis of the Dynamics of Antibiotic-Resistant Microorganisms and Resistance Genes and Elucidation of Their Removal Mechanisms in Biological Wastewater Treatment Systems	上海第二工业大学
56	AI赋能高速公路隧道地震风险量化与韧性提升研究	上海理工大学
57	Precision photochemistry of volumetric 3D printing for high-impact biomedical applications	东华大学
58	用于自驱动可穿戴传感器的压电驻极体增强型压电/摩擦电纳米发电机	华东理工大学
59	Lifetime-Aware Operation of Off-Board Fast Chargers under Battery-Imposed Power Profiles	同济大学
60	Magnetically Responsive Hydrogel-Mineral Nanorobots for Targeted Biomedical Applications	复旦大学
61	可植入式纤维状锌离子电池电荷输运与界面稳定性的增强机制研究	东华大学
62	轻稀土高熵氧化物催化材料智能制备	东华大学
63	Integrated Investigation of Climate-Induced Subgrade Degradation and Resilience Enhancement in Advanced Railway Infrastructure	同济大学
64	城镇易腐垃圾暗光联合生物制氢系统中耐抑制新菌种挖掘及其产氢代谢途径解析	上海交通大学
65	Innovative Energy Dissipation Devices for Reinforced Concrete Coupling Beams: Integrated Numerical and Experimental Research	同济大学
66	Thermally robust ceramic phosphors with adjustable emission spectrum for high color rendering solid-state lighting	中国科学院上海硅酸盐研究所
67	有机固废生物冶炼羧酸定向提取技术	东华大学
68	Development of chitosan-based nanoplatforms for targeted delivery of fluoroquinolones	东华大学
69	Towards real-time quality control in 3D concrete printing: Physics-informed neural networks for inverse analysis of rheological characteristics in cementious material	同济大学
70	面向高温宽频吸波的反应结合Si_3N_4和SiC多元复合陶瓷设计与性能研究	东华大学

序号	项目名称	承担单位
71	A hollow pyramid-shaped photothermal system for highly efficient simultaneous solar desalination and thermoelectric generation	东华大学
72	生物质成型炭颗粒原位气化	华东理工大学
73	Bridge Life Cycle Management Using Automated Databases	同济大学
74	NEXT-Bridge — Next generation of structural health monitoring of bridges through artificial intelligence, transfer learning, and digital twin technologies	同济大学
75	PE吹膜结构演变的同步辐射原位研究	中国科学院上海高等研究院
76	Synthesis of VOx-Ag nanojunctions with plasmon-enhanced photocatalytic and photothermal effects for constructing rewritable mono-/multi-color fabrics	东华大学
77	Circular Pavement Materials: Synergistic Effects of Graphene and Recycled Crumb Rubber in Self-Healing Asphalt	同济大学
78	Integrated Maintenance and Management System for Engineering Structures Based on Mechanical Properties	同济大学
79	Smart Damage Detection System for Structure Using Continuous Monitoring	同济大学
80	Synthesis of Flexible Photothermal Fibers for Carbon Capture and Photothermal Release	东华大学
81	纤维素/离子框架固态电解质的多级结构设计与离子传导机制研究	东华大学
82	介孔碳纤维负载型原子团簇催化剂的精准可控制备	东华大学
83	Interaction Behavior Modeling and Coordinated Optimization Methods for Autonomous Vehicles and Non-Motorized Vehicles at Intersections	同济大学
84	废水生物能源定向转化与协同工艺研究	东华大学
85	基于生物启发的全柔性模块化海上漂浮式光伏场设计研究 - SolarWeb: A bio-inspired fully flexible and modular solution for offshore floating solar farms	上海交通大学
86	AI-Quake: A Machine Learning Framework for the Evaluation of Seismic Risk in Buildings and Infrastructure	同济大学
87	面向碳中和的污水营养物定向回收与智能调控关键 技术研究	东华大学
88	Polar broad-spectrum anti-corrosion and anti-icing coatings ice-phobic mechanisms and cross-scale regulation study	上海海事大学

序号	项目名称	承担单位
89	Removal of microplastic from aqueous solutions by iron-biopolymer matrices	上海第二工业大学
90	Smart hybrid electrospun scaffolds doped with 2D reduced graphene oxide for the treatment of osteoporosis	上海第二工业大学
91	太阳能驱动的碳捕集与利用：光热协同机制与能质耦合调控研究	上海第二工业大学
92	以人为本的智能系统（HIS）：基于数字孪生与可穿戴传感器的主动式建筑健康安全管理	上海理工大学
93	Development of a transition metal-based tandem photoelectrocatalytic cell for the production of green hydrogen through solar energy conversion	上海工程技术大学
94	Integrated Treatment for N, P, algae and organic-compound removal from recirculating aquaculture systems	上海市农业科学院
95	钙质砂地层中海上风电桩桶复合基础循环弱化机理与承载变形特性	上海海事大学
96	面向优化与智能区域能源系统的创新多能源协同分布式网络	上海理工大学
97	From Waste to Bioplastic: Valorization of Anaerobic Digestate into Cellulose Biocomposites through Microbial Conversion	上海理工大学
98	Development of Acoustic metamaterials for high-speed train aerodynamic noise reduction	上海工程技术大学
99	Machine Learning-Based Climate-Induced Hazard Prediction and Built Environment Impact Assessment for Chinese Cities	上海大学
100	痕量共价有机框架提升聚合物电介质高温储能性能及机理研究	上海第二工业大学
101	基于水动力耦合模型的渔具网目结构对渔获物逃逸尺寸的影响机制及逃逸阈值研究	上海海洋大学
102	基于微通道-相变材料复合系统的太阳能集热-储热-释热系统优化设计与能量管理	上海理工大学
103	Utilization and Recycling of Iron and Steelmaking By-products through Hydrogen Reduction	上海大学
104	Multi-functional hydrogel based triboelectric nanogenerators for bio-mechanical energy sensing and harnessing	上海大学
105	Electrified carbocatalysis for sustainable chemical synthesis	同济大学
106	Laboratory Astrophysics: Studies of Molecules from the Interstellar Medium by Fourier Transform Microwave Spectroscopy	复旦大学

序号	项目名称	承担单位
107	Reading and writing defect structures in porous crystals	上海科技大学
108	单壁碳纳米管的精准调控与先进光电子学研究	东华大学
109	基于可印刷二维半导体的健康监测传感器研究	上海交通大学
110	二维电子化合物定向设计与合成氨应用研究	上海交通大学
111	Dissipitative Gating of DNA Nanopores for Smart, Autonomous Control of Molecular Transport	同济大学
112	无铅双钙钛矿纤维负极材料的设计合成及其储锂机制研究	东华大学
113	AI-Based Predictive Modelling and Experimental Investigation of Microplastic Degradation	上海第二工业大学
114	抗肿瘤光敏新药及其高效靶向递释系统研究	东华大学
115	适配工业烟气的CO_2捕获-催化转化制甲醇技术开发及机理研究	上海应用技术大学
116	Circular Carbon Catalysts: Co-Pyrolyzed Plastic-Biomass Char for Liquid Biomass Conversion	复旦大学
117	Synthesis of atomically dispersed copper over Ti3C2 based MXene for on-site detection of cariogenic bacteria	上海大学
118	Solar-driven circular catalytic systems for wastewater purification and green hydrogen production 太阳能驱动的循环催化净水和绿色产氢系统	上海第二工业大学
119	Quantum Magnetism in π-d Hybrid Architectures	上海交通大学
120	High-Entropy Cu-Based MOFs for Efficient Multi-Carbon Fuel Production in Solar-Driven Cascade Systems	上海交通大学
121	废弃甲壳素衍生碳基电催化剂的精准构建及其高效还原硝酸盐制氨机制研究	上海交通大学
122	基于超微纳米电极的人工细胞信号实时监测与多细胞网络调控研究	上海应用技术大学
123	轻质高导电石墨烯复合双极板的构筑与燃料电池性能提升机制研究	上海第二工业大学
124	Understanding the fate and impacts of microplastics and nanoplastics in Canadian and Chinese Climates	华东师范大学

序号	项目名称	承担单位
125	Integrating Machine Learning and Proteogenomics for Pan-cancer Therapeutic Targets Discovery	复旦大学
126	Neural Mechanisms of Modulating Behavioural Flexibility by Thermal State	复旦大学
127	Characterization and Development of Novel Mouse Models of Pediatric Tumors Driven by RNA Metabolism Dysregulation	复旦大学
128	Developmental Programming of Bird Covert Feathers: Structure-Function Coupling and Bioinspired Design	华东师范大学
129	Seeing the Whole from Parts: Brain-inspired Frontotemporal AI Models for Occluded Recognition	中国科学院脑科学与智能技术卓越创新中心
130	超声引导梯度电活性水凝胶调控钙化软骨层重建的研究	上海交通大学医学院附属瑞金医院
131	Engineering Living Bone via Wireless Electroactive 3D Bioplatforms: Toward Vascularized, Innervated, and Immunomodulated Regeneration	中国科学院上海硅酸盐研究所
132	Genetic engineering of black soldier fly for optimised lipid composition	上海交通大学
133	Understanding the restriction mechanisms of E3 ubiquitin ligases against poxviruses	中国科学院上海药物研究所
134	超声响应型共轭聚合物纳米质粒调控肿瘤力学强度用于增强免疫治疗的研究	东华大学
135	Characterising the Interactions between the Host and the Pathogen for Dissemination and Evolution of Antimicrobial Resistance	中国科学院上海药物研究所
136	基于磁微流控光谱分析芯片的单细胞分析技术	上海交通大学
137	Farm to Fork: Phylogenomic Insights into the Spread of Antimicrobial Resistance in Shanghai	上海交通大学
138	血管畸形与心力衰竭的关联机制及干预靶点与药物研究	复旦大学
139	Cardioprotective and Oxygenating iPSC-CM Myofiber Bundles for Myocardial Repair	东华大学
140	Development of Recombinant Paramyosin-Based Rapid Diagnostic Tools for Schistosomiasis and Fascioliasis: An Africa-Asia Collaborative Approach	复旦大学
141	Study on the Remediation Mechanism of Nitrogen-Fixing Bacterium for BTEX- Polluted Soil	上海交通大学
142	Integrative Genomic and Small RNA Approaches to Uncover Virulence Mechanisms Associated with Pellicle Biofilms in Elizabethkingia anophelis	中国科学院上海药物研究所

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143	Disruption of the home-field advantage: A hidden link of how microplastics and P enrichment may drive plant invasion	上海市农业科学院
144	Synergic impact of changes in pH and salinity on broodstock ovarian maturation and gut microbiota of green mud crab Scylla paramamosain, and its potential coping mechanisms	上海海洋大学
145	AI-Driven Intelligent Perception and Fully Automated Control for Parallel Bioreactors	迪必尔生物工程（上海）有限公司
146	Unravelling metabolic processes during early female reproduction in maize — establishment of the germline as a sink tissue	上海师范大学
147	营养功能性草莓新种质创制与遗传改良	上海市农业科学院
148	Nutritional Strategies Enhance Stress Resilience and Growth of Mytilus coruscus under Multifactorial Stress	上海海洋大学
149	脉冲电场预处理减缓淀粉消化性的作用机制研究	上海理工大学
150	基于脑机接口的认知障碍筛查和干预研究	上海脑回跃变科技有限公司
151	Understanding Spermatheca Biology and Function in Scylla paramamosain: A Morphological and Multi-Omics Approach to Determining Long-Term Sperm Storage Properties	上海海洋大学
152	PAHMSORB: Polycyclic Aromatic Hydrocarbon and Heavy Metal multifunctional SORBent based on ionic liquid-functionalized inverse vulcanized polysulfides	上海海洋大学
153	设施西瓜生防复合菌群的构建与协同增效机理的多组学解析	上海市农业科学院
154	Are Nutritional Factors able to Improve productivity, Eggshell quality, Skin Health, Feather Coverage in aged hens?	上海市农业科学院
155	Genome-integrated analysis of propidium monoazide-mediated modulation of CRISPR/Cas12a activity in antibiotic-resistant Salmonella spp.	上海市农业科学院
156	Adjustment of multi-level heterogeneities for the optimization of PSMA-directed radioligand therapy	上海交通大学医学院附属瑞金医院
157	中国慢性病预防中的数字健康、行为助推与先进建模	复旦大学
158	柴桂温阳方改善曲妥珠单抗所致心脏毒性的免疫微环境作用及关键标志物研究	上海中医药大学附属龙华医院
159	A Shanghai-Ethiopia Collaboration: Developing Novel Serological Tools to Map Hidden Malaria Reservoirs and Advance Global Eradication Efforts	上海交通大学医学院

序号	项目名称	承担单位
160	Towards the Early Identification of Mental Health Problems in Children and Adolescents	复旦大学
161	Harnessing a microphysiological glioblastoma-on- chip model for pre-clinical screening of precision radiation therapeutics	上海中医药大学
162	Muscle-Signalling for Health (MuSig-Health): Exploring novel secreted factors from muscle as a promising therapeutic avenue for treating aging and disease	上海大学
163	Design, Synthesis and Activity Study of Imidazo[2, 1-h]pteridine Derivatives	上海健康医学院
164	Magnetically Guided CAR-T Cell Spheroids as Bio-Microrobots for Targeted Immunotherapy for Solid Tumors	复旦大学
165	Exploiting Metabolic Vulnerability to Enhance Complement-Mediated Killing of methicillin-resistant Staphylococcus aureus	复旦大学附属华山医院
166	基于多模态人工智能的结直肠癌术后肝转移早期预测模型的构建与临床转化研究	上海市同济医院
167	Development and application of geometric-semantic intervention based on the E→S→X model to improve attention for old adults with cognitive impairment	复旦大学附属华山医院
168	Integrated Imaging-Spatial Transcriptomic Analysis and Personalized Management for Pediatric Cerebral Cavernous Malformations	复旦大学附属华山医院
169	Study on the mechanism of β-glucanase degrading glucan to prevent bacterial biofilm formation in the treatment of severe infection	上海市第一人民医院