预算说明

Budget description

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| **一、中央财政资金**  **1、 Central financial funds**  **预算的编制要坚持任务相关性、政策相符性和经济合理性，实事求是编制提出课题预算。填报时，直接费用应按设备费、业务费、劳务费三个类别填报，每个类别结合科研任务按支出用途进行说明。除50万元以上的设备外，其他费用只提供基本测算说明，不需要提供明细。**  **The preparation of the budget should adhere to the task relevance, policy compliance and economic rationality, and formulate and propose the subject budget in a practical and realistic manner. When reporting, direct expenses should be reported in three categories: equipment expenses, business expenses and labor expenses, and each category should be explained according to the purpose of expenditure in combination with scientific research tasks. Except for the equipment with more than 500000 yuan, only the basic calculation description is provided for other expenses, and no details are required.**  **1.设备费（是指项目实施过程中购置或试制专用仪器设备，对现有仪器设备进行升级改造，以及租赁外单位仪器设备而发生的费用等。计算类仪器设备和软件工具可在设备费科目编列。填报时，50万元以上的设备详细说明，50万元以下的设备费用分类说明）**  **1. equipment cost (refers to the cost incurred by purchasing or trial producing special instruments and equipment, upgrading existing instruments and equipment, and leasing instruments and equipment from other units during the implementation of the project. Calculation instruments and equipment and software tools can be listed in the equipment cost account. When filling in, the detailed description of equipment above 500000 yuan and the classification description of equipment cost below 500000 yuan)**    **a)高精度高压电源，共计70万。**  **a) High precision high-voltage power supply, totaling 700000.**  与本项目关联性：ATLAS实验所试制的高颗粒度高时间分辨探测器（HGTD）的模块最高工作电压在800V左右，并且需要实时测量其探测器的漏电流。因此需要专用的高压源为探测器提供高压，并测量其纳安级别的微小漏电流。电压范围为0至-900V，单通道电流最大3mA，一共需要8032个通道。在与CERN签署的协议中，中国组负责20%高压电源的研制。  Relevance to this project: the maximum working voltage of the module of the high granularity and HGTD manufactured by Atlas experiment is about 800V, and the leakage current of the detector needs to be measured in real time. Therefore, a special high-voltage source is needed to provide high voltage for the detector and measure the micro leakage current at the nA level. The voltage range is 0 to -900v, the maximum current of a single channel is 3mA, and a total of 8032 channels are required. In the agreement signed with CERN, the Chinese group is responsible for the development of 20% of the high-voltage power supply.  测算依据：购买50个16通道高精度高压电源，1.4万/个\*50个=70.0万。  Calculation basis: purchase 50 16 channel high-precision high-voltage power supplies, 14000 \*50 =700000.  主要性能：电压0- -900V，精度0.1V  Main performance: voltage 0--900v, accuracy 0.1V  漏电流测量精度100nA  Leakage current measurement accuracy 100na  每个高压电源有16个通道，通道间互相独立无串扰。  Each high-voltage power supply has 16 channels, which are independent of each other without crosstalk.  **2.业务费（是指在项目实施过程中消耗的各种材料、低值易耗品等、发生的测试化验加工、燃料动力、出版文献、信息传播、知识产权事务、会议、差旅、国际合作与交流以及其他与项目实施直接相关的各项费用。编报时，对单笔大额支出、对外委托支出重点说明）**  **2. business expenses (refer to all kinds of materials, low value consumables, etc. consumed in the process of project implementation, testing, testing and processing, fuel power, publishing literature, information dissemination, intellectual property affairs, conferences, travel, international cooperation and exchange, and other expenses directly related to project implementation. When compiling and reporting, focus on the description of single large expenditure and external entrusted expenditure)**  业务费共736万  Business expenses totaled 7.36 million yuan  **大规模的HGTD探测器中LGAD硅传感器的工程批流片，267 万。**   * 1. **The engineering batch of LGAD silicon sensor in large-scale hgtd detector is 2.67 million.**   与本项目关联性：抗辐照LGAD传感器研发是HGTD项目的其中一个最关键的研究内容，直接与探测器的时间分辨率与使用寿命关联。在与CERN签署的协议中，中国组负责88%的LGAD传感器研制，其中34%属于实物贡献（高能所负责其中24%，科大负责其中10%），另外的54%属于在欧洲核子中心国际招标采购。本项目组高能所与科大两个团队分别利用国产工艺研制出高时间分辨率抗辐照硅传感器。所开发的高时间精度LGAD 硅传感器原型的时间分辨率优于50 皮秒，能够承受LHC 升级后的超高辐照剂量（2.5×1015 neq/cm2的等效中子通量），满足ATLAS实验第二期升级的需求。它是目前同类的LGAD 硅传感器原型中全球性能最优秀的，其性能显著好于国际著名的日本滨松公司与意大利FBK 研究所的LGAD原型传感器，将会在本项目支持下为ATLAS实验提供传感器，这是国产传感器首次在CERN大规模采用。在2023年，高能所与微电子所联合与日本滨松公司与意大利的FBK研究所竞争欧洲核子中心在ATLAS高颗粒度时间探测器上的硅传感器的国际招标，并最终赢得该招标。  Relevance to this project: the research and development of radiation resistant LGAD sensor is one of the most critical research contents of hgtd project, which is directly related to the time resolution and service life of the detector. In the agreement signed with CERN, the Chinese group is responsible for 88% of the LGAD sensor development, of which 34% belongs to in kind contributions (24% in the charge of the IHEPand 10% in the charge of the University of science and Technology), and the other 54% belongs to the international bidding procurement of the European nuclear center. The two teams of IHEP and University of science and technology of the project team respectively developed high-time resolution radiation resistant silicon sensors by using domestic technology. The time resolution of the developed LGAD silicon sensor prototype with high time accuracy is better than 50 picoseconds, and it can withstand the ultra-high radiation dose (2.5 μ m) after LHC upgrade × Equivalent neutron flux of 1015 NEQ/cm2), which meets the needs of the second phase upgrade of atlas experiment. It is the world's best LGAD silicon sensor prototype of its kind at present. Its performance is significantly better than that of the LGAD prototype sensor of the internationally famous Hamamatsu company of Japan and the FBK Institute of Italy. It will provide sensors for Atlas experiment under the support of this project, which is the first time that domestic sensors are widely used in CERN. In 2023, the IHEP and the Institute of microelectronics jointly competed with Hamamatsu Corporation of Japan and FBK Institute of Italy for the international bidding of the silicon sensor on atlas high granularity time detector of the European nuclear center, and finally won the bidding.  测算依据：本项目需要至少150个硅晶圆。根据中国科学院微电子研究所报价，用LGAD超快传感器的复杂新工艺下每个硅晶圆的采购成本为0.18万元。工程批流片报价为每次80万，一次流片研制50个晶圆，研制150晶圆需要3次流片，3次×80万/次=240万元。  Calculation basis: the project requires at least 150 silicon wafers. According to the quotation of Institute of microelectronics, Chinese Academy of Sciences, the procurement cost of each silicon wafer under the complex new process of using LGAD ultra fast sensor is 18000 yuan. The quotation for the engineering wafers is 800000 each time. 50 wafers are developed at one time, and 150 wafers are developed at three times, three times × 800000 yuan/time=2.4 million yuan.  LGAD硅传感器的流片加工费用为150个晶圆×0.18 万元/晶圆+240万元=267万元。  The processing cost of LGAD silicon sensor is 150 wafers × 18000 yuan/wafer+2.4 million yuan=2.67 million yuan.  **加工单位：中国科学院微电子研究所。抗辐照LGAD超快传感器是高端传感器新技术。加工单位必须要通过ATLAS合作组的测试与认证。目前国内只有本项目组与中国科学院微电子研究所合作研发的超快传感器通过ATLAS合作组的质量认证。研发LGAD超快传感器的周期比较长（2～3年）。目前，国内其他加工单位研制LGAD超快传感器还无法满足ATLAS实验要求。**  **Processing unit: Institute of microelectronics, Chinese Academy of Sciences. Irradiation resistant LGAD ultra fast sensor is a new high-end sensor technology. The processing institute must pass the testing and certification of atlas cooperation group. At present, only the ultrafast sensor developed by the project team in cooperation with the Institute of microelectronics, Chinese Academy of Sciences has passed the quality certification of atlas cooperation team. The development cycle of LGAD ultra fast sensor is relatively long (2-3 years). At present, the LGAD ultra fast sensor developed by other domestic processing units can not meet the requirements of atlas experiment.**  **模块组装打线加工费18万元。**   * 1. **The module assembly and wiring cost is 180000 yuan.**   与本项目关联性：模块组装的任务是将LGAD与电子学芯片倒装焊后与读出电路板组装在一起，这是探测器建造的重要环节。  Relevance to the project: the task of module assembly is to assemble LGAD and electronics chip flip chip and readout circuit board together, which is an important part of detector construction.  测算依据：中国科学技术大学微纳中心平台的自动打线机按机时收取加工费：600元/小时。科大将组装1000个模块，平均每个模块需时0.5小时，费用共计0.06\*0.3\*1000=18万元。  Calculation basis: the processing fee of the automatic threading machine on the platform of the micro nano center of the University of science and technology of China is charged by machine hour: 600 yuan/hour. The University of science and technology will assemble 1000 modules, each module takes 0.5 hours on average, and the total cost is 0.06 \* 0.3 \* 1000=180000 yuan.  **c ) 用于柔性电子学板（Flex Tail）的生产，共计105万。**  **C) for the production of Flex Tail, a total of 1.05 million.**  与本项目关联性：在与CERN签署的协议中，中国组负责1/3 柔性电子学板的生产责任。  Relevance to the project: in the agreement signed with CERN, the China group is responsible for the production of 1/3 of the flexible electronics board.  测算依据：在HGTD升级中，共需要7500块FT软板，中国组负责1/3的生产任务，也就是2500块。根据工厂的报价以及多次沟通的结果，柔性电子学板的材料费，包括：每块柔性电子学板的单价是0.042万，总价：0.042万/个\*2500个=105.0万。  Calculation basis: in the hgtd upgrade, a total of 7500 ft soft boards are required, and the China team is responsible for 1/3 of the production task, that is, 2500. According to the quotation of the factory and the results of repeated communication, the material cost of flexible electronic board includes: the unit price of each flexible electronic board is 0420000, and the total price is 0420000/piece \* 2500 pieces=1050000.  **加工单位：根据多方询价，无锡鸿瑞科技有限公司给的价格较低。基于此，已经开展了为期2年的FT预研工作。目前，其公司生产的FT各项指标均已达标。**  **Processing unit: according to the inquiry from many parties, the price given by Wuxi Hongrui Technology Co., Ltd. is lower. Based on this, a two-year ft pre research has been carried out. At present, all indicators of FT produced by the company have reached the standard.**  **高压模块的的研发和生产的材料费，共计70万。**   1. **The material cost for R&D and production of high-voltage module is 700000 yuan in total.**   与本项目关联性：在与CERN签署的协议中，中国组负责高压电源的研制。  Relevance to the project: in the agreement signed with CERN, the Chinese group is responsible for the development of high-voltage power supply.  测算依据：在HGTD升级中，共需要8032个高压模块的通道，中国负责约20%的生产任务，共1560个通道。根据工厂的报价以及多次沟通的结果，每个高压通道的材料费为900元，本次申请的课题经费将用于780个通道的研发生产，总价：0.09万/个\*780个=70.0万。  Calculation basis: in the hgtd upgrade, a total of 8032 channels of high-voltage modules are required. China is responsible for about 20% of the production tasks, with a total of 1560 channels. According to the quotation of the factory and the results of many communications, the material cost of each high-voltage channel is 900 yuan. The applied project funds will be used for the R&D and production of 780 channels, with a total price of 0900/channel \* 780 channels=700000.  **加工单位：根据多方询价，株洲福德轨道交通研究院有限公司给的价格较低。**  **Processing unit: according to the inquiry from many parties, Zhuzhou Ford rail transit Research Institute Co., Ltd. offered a lower price.**  **e）探测器模块的倒装焊费用（bump bonding），50万。**  **e) The bump bonding cost of detector module is 500000 yuan.**  与项目相关性：项目中研制ATLAS实验高粒度时间探测器模块的关键是把探测器与读出ASIC芯片通过倒装焊原位键合。利用倒装焊技术，在传感器上植入金属凸点（凸点焊料为SnAg），通过超声或者热压把传感器上金属凸点与读出ASIC芯片电极建立连接，倒装焊技术比丝焊连线短、寄生电容和寄生电感小，更适于本项目中高频、高速、高I/O端的ASIC读出电路。  Relevance to the project: the key to the development of atlas experimental high granularity time detector module in the project is to bond the detector and readout ASIC chip in situ through flip chip bonding. Using flip chip technology, metal bumps (snag solder) are implanted on the sensor, and the metal bumps on the sensor are connected with the readout ASIC chip electrode by ultrasonic or hot pressing. Flip chip technology is shorter than wire welding, and has smaller parasitic capacitance and inductance. It is more suitable for the ASIC readout circuit of high frequency, high speed and high i/o terminal of the project.  测算依据：根据华进半导体封装公司的报价，倒装焊封装超快探测器单元模块的费用为400元（其中晶圆上镀镍金的费用为100元，ASIC精确植球费用为250元，倒装焊费用为150元）。研制3平方米HGTD探测器要1000个模块，成本费用为500元/每个模块×1000个模块=50万元。  Calculation basis: according to the quotation of Huajin semiconductor packaging Co., Ltd., the cost of flip chip welding and packaging ultrafast detector unit module is 400 yuan (including the cost of nickel plating on the wafer is 100 yuan, the cost of ASIC precise ball planting is 250 yuan, and the cost of flip chip welding is 150 yuan). It takes 1000 modules to develop a 3 M2 hgtd detector, and the cost is 500 yuan/module × 1000 modules=500000 yuan.  加工单位：华进半导体公司是国内十大半导体封装公司之一，其倒装焊技术是国内领先。  Processing unit: Huajin Semiconductor Co., Ltd. is one of the top ten semiconductor packaging companies in China, and its flip chip welding technology is leading in China.  **f）外围读出电路板，共计200万**  **f) Peripheral readout circuit board, 2million in total**  与本项目关联性：在与CERN签署的协议中，中国组负责高ATLAS实验高粒度时间探测器全部柔性电子学板的研制。外围读出电子学板的PCB是外围电子学至关重要的组成部分，它承载着电子元件并提供电气连接。然而，其设计和制造面临着布局、制造精度、元件密度和技术发展等方面的挑战。克服这些挑战需要工程师具备深厚的专业知识和经验，并与制造商和供应商密切合作，以确保高质量的PCB产品。首先，PCB设计需要考虑HGTD模块电路布局和布线的复杂性。在设计过程中，需要合理安排元件的位置和连接，以确保信号传输的稳定性和可靠性。这需要充分理解HGTD电路的功能和要求，并进行高达22层的多层堆叠和布线规划，对高速信号传输进行模拟与仿真。其次，PCB制造过程需要高度的精确性和可控性。制造过程中的每个步骤，包括印刷、蚀刻、镀金和焊接，都需要精确的控制，以确保PCB的质量和性能。任何制造过程中的偏差或缺陷都可能对PCB的功能产生不利影响。此外，随着ATLAS电子学元器件和连接器的小型化和功能的增加，PCB上的元件密度也越来越高。这给布线和散热带来了挑战。在有限的空间内，需要精确地布置元件并开展微孔、埋盲孔设计、提供有效的散热系统，以确保PCB的稳定性和可靠性。  Relevance to this project: in the agreement signed with CERN, the Chinese group is responsible for the development of all flexible electronic boards for High Atlas experimental high granularity time detectors. The PCB of peripheral readout electronics board is an important part of peripheral electronics. It carries electronic components and provides electrical connections. However, its design and manufacture are facing challenges in terms of layout, manufacturing accuracy, component density and technological development. Overcoming these challenges requires engineers to have profound professional knowledge and experience, and work closely with manufacturers and suppliers to ensure high-quality PCB products. First, PCB design needs to consider the complexity of hgtd module circuit layout and wiring. In the design process, it is necessary to reasonably arrange the position and connection of components to ensure the stability and reliability of signal transmission. It is necessary to fully understand the functions and requirements of hgtd circuit, and carry out multi-layer stacking and wiring planning up to 22 layers to simulate and simulate high-speed signal transmission. Secondly, the PCB manufacturing process needs a high degree of accuracy and controllability. Every step of the manufacturing process, including printing, etching, gold plating and welding, needs precise control to ensure the quality and performance of PCB. Any deviation or defect in the manufacturing process may adversely affect the function of PCB. In addition, with the miniaturization and function increase of atlas electronic components and connectors, the component density on PCB is also getting higher and higher. This poses challenges to cabling and cooling. In a limited space, it is necessary to accurately arrange components, carry out micro hole and buried blind hole design, and provide effective heat dissipation system to ensure the stability and reliability of PCB.  测算依据：  Calculation basis:  **PEB PCB生产与组装**  **PEB PCB production and assembly**  根据HGTD模块布局的镜像结构优化，需要设计6种不同类型的PEB，其中1F、2F、1B和2B板可以在正反两侧使用。在这样的布局下每个HGTD端盖需要产生80个电路板，HGTD总共需要160个电路板。  电路板生产包括预生产和批量生产两部分。  According to the mirror structure optimization of hgtd module layout, six different types of PEBS need to be designed, among which 1f, 2f, 1b and 2b boards can be used on both sides. In such a layout, each hgtd end cover needs to generate 80 circuit boards, and hgtd needs 160 circuit boards in total.  Circuit board production includes pre production and batch production.  表 PEB PCB预生产价格估计  Table PEB PCB pre production price estimation   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 工程费/  Engineering cost/  万元  10000 yuan | 面积/mm2  Area/mm2 | 每种PCB的估价/  Valuation of each PCB/  万元  10000 yuan | PCB预生产  PCB pre production | | | 数量/个  Quantity/piece | PCB估价小计/万元  Subtotal of PCB appraisal/10000 yuan | | 1F  1F | 3 | 227.67\*260.04  227.67\*260.04 | 0.426 | 2 | 0.9 | | 2F  2F | 3 | 317.69\*259.27  317.69\*259.27 | 0.593 | 2 | 1.2 | | 3F  3F | 3 | 342.41\*262.61  342.41\*262.61 | 0.647 | 1 | 0.6 | | 1B  1B | 3 | 270.44\*227.67  270.44\*227.67 | 0.443 | 2 | 0.9 | | 2B  2B | 3 | 272.0\*317.69  272.0\*317.69 | 0.622 | 2 | 1.2 | | 3B  3B | 3 | 342.41\*279.61  342.41\*279.61 | 0.689 | 1 | 0.7 | | Total  Total | 18.0 |  |  |  | 5.5 |   PCB预生产的成本约23.5万。  The cost of PCB pre production is about 235000 yuan.  此外，PCB组装的成本约为29.5万（48000 \* 6 + 650 \* 10）。  In addition, the cost of PCB assembly is about 295000 (48000 \* 6+650 \* 10).  考虑到设计可能会根据测试的反馈进行修改，需要预留2次PCB修改的机会。预计花费约18万元（包括组装）。  Considering that the design may be modified according to the feedback of the test, it is necessary to reserve two opportunities for PCB modification. The estimated cost is about 180000 yuan (including assembly).  所以，PEB预生产的总成本约为71.0万元。  Therefore, the total cost of PEB pre production is about 710000 yuan.  表 PEB PCB批量生产价格估计  Table PEB PCB batch production price estimation   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | 工程费/  Engineering cost/  万元  10000 yuan | 面积/mm2  Area/mm2 | 每种PCB的估价/  Valuation of each PCB/  万元  10000 yuan | PCB批量生产  PCB batch production | | | 数量/个  Quantity/piece | PCB的估计/CNY  PCB estimation/cny | | 1F  1F | 2.5 | 227.67\*260.04  227.67\*260.04 | 0.236 | 32 | 7.6 | | 2F  2F | 2.5 | 317.69\*259.27  317.69\*259.27 | 0.329 | 32 | 10.5 | | 3F  3F | 2.5 | 342.41\*262.61  342.41\*262.61 | 0.359 | 16 | 5.7 | | 1B  1B | 2.5 | 270.44\*227.67  270.44\*227.67 | 0.246 | 32 | 7.9 | | 2B  2B | 2.5 | 272.0\*317.69  272.0\*317.69 | 0.345 | 32 | 11.0 | | 3B  3B | 2.5 | 342.41\*279.61  342.41\*279.61 | 0.382 | 16 | 6.1 | | Total  Total | 15.0 |  |  |  | 48.8 |   PCB批量生产的成本约63.8万元  The cost of PCB batch production is about 638000 yuan  PCB贴片组装的成本约10.4万元(650\*160)‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬  The cost of PCB patch assembly is about 104000 yuan (650\*160) ‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬.36‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬  所以PEB批量生产的总成本是74.2万元  So the total cost of PEB batch production is 742000 yuan  **PEB固定件与支撑件机械加工**  **PEB fixture and support machining**  PEB还需用peek或铝材料加工安装固定件、支撑件和散热块用于系统安装与测试。  PEB also needs peek or aluminum materials to process and install fixings, supports and cooling blocks for system installation and testing.  表. 固定件与支撑件加工价格估计  Table Processing price estimation of fixed parts and supports   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 加工项  Processing item | 预生产  Pre production | | | 批量生产  Mass production | | | | 单价/元  Unit price/yuan | 数量  number | 小计/万元  Subtotal/10000 yuan | 单价/元  Unit price/yuan | 数量  number | 小计/万元  Subtotal/10000 yuan | | 电磁屏蔽罩加工  Processing of electromagnetic shielding cover | 10 | 557 | 0.6 | 8 | 8906 | 7.1 | | 光纤支架  Optical fiber support | 10 | 81 | 0.1 | 8 | 1288 | 1.0 | | 光纤收发器散热片，铝加工  Optical fiber transceiver heat sink, aluminum processing | 15 | 27 | 0.0 | 13 | 429 | 0.6 | | PEB支撑与散热，铝加工  PEB support and heat dissipation, aluminum processing | 500 | 30 | 1.5 | 450 | 552 | 24.8 | | 合计  total |  |  | 2.2 |  |  | 33.6 |   所以固定件与支撑件加工合计35.8万元  Therefore, the processing of fixed parts and supports totals 358000 yuan  **PEB可靠性测试**  **PEB reliability test**  通过使用各种环境试验设备模拟气候环境中的高温、低温、高温高湿以及温度变化等情况，加速反应产品在使用环境中的状况，来验证其是否达到在研发、设计、制造中预期的质量目标，从而对产品整体进行评估，以确定产品可靠性寿命。  By using various environmental test equipment to simulate the conditions of high temperature, low temperature, high temperature and high humidity and temperature change in the climatic environment, accelerate the reaction of the conditions of the product in the service environment, and verify whether it meets the expected quality objectives in the research, development, design and manufacturing, so as to evaluate the overall product and determine the reliability life of the product.  **表 可靠性测试价格估计**  **Table reliability test price estimation**   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **单价/元每小时**  **Unit price/yuan/hour** | **持续时长/小时**  **Duration/hour** | **批次数量**  **batch quantity** | **小计/万元**  **Subtotal/10000 yuan** | | 预生产高温老化HTOL  Pre production high temperature aging HTOL | 40 | 96 | 1 |  | | 预生产高低温循环TC  Pre production high and low temperature cycle TC | 80 | 10 | 1 | 0.08 | | 批量生产高温老化HTOL  Mass production of high temperature aging HTOL | 40 | 24 | 40 |  |   ‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬合计可靠性测试成本约4.3万元  ‬‬‬‬‬‬‬‬‬‬‬‬‬‬‬the total reliability test cost is about 43000 yuan  g）会议费：24万  g) Conference fee: 240000  计划进行8次项目组会议，其中包括项目启动会，项目中期评审会议，项目终期评审会议，以及项目组每年的年度会议。每次会议的会议费3万，共3万/次\*8次=24万  It is planned to hold 8 project team meetings, including the project kick-off meeting, the mid-term review meeting, the final review meeting and the annual meeting of the project team. The cost of each meeting is 30000 yuan, a total of 30000 yuan/time \*8 times=240000 yuan  **h)差旅费：2万元。**  **h) Travel expenses: 20000 yuan.**  测算依据：课题组成员国内出差进行技术交流和讨论，5年共计4人次，预计每人次5000万元（往返机票2000元+房费300元×5天+出差补助180元×5天+会议注册费600元=5000元）×4人次=2万元。  Calculation basis: the members of the research group will travel in China for technical exchanges and discussions, with a total of 4 people in five years, and it is estimated that 50million yuan will be paid per person (2000 yuan for round-trip air tickets+300 yuan for room fees × 5 days+business trip subsidy of 180 yuan × 5 days+conference registration fee 600 yuan=5000 yuan) × 4 person times=20000 yuan.  **3.劳务费（是指在项目实施过程中支付给参与项目的研究生、博士后、访问学者以及项目聘用的研究人员、科研辅助人员、科研（财务）助理等的劳务性费用；支付给临时聘请的咨询专家的费用等。项目聘用人员由单位缴纳的社会保险补助、住房公积金等可纳入劳务费列支。）**  **3. labor costs (refer to the labor costs paid to graduate students, postdoctors, visiting scholars, researchers, research assistants, and Research (financial) assistants engaged in the project during the implementation of the project; Fees paid to temporarily hired consultants, etc. The social insurance subsidies and housing accumulation funds paid by the unit for the project employees can be included in the labor costs.)**    劳务费共126万  Labor cost totaled 1.26 million yuan  博士研究生：4名在读博士生，每月补贴2000元，每年工作10个月，五年共计40.0万元；   1. Doctoral students: four doctoral students, with a monthly subsidy of 2000 yuan, work for 10 months a year, and a total of 400000 yuan for five years;   博士后：3名博士后，每月工资5000元，每年工作6个月，五年共计45.0万元；   1. Postdoctors: three postdoctors, with a monthly salary of 5000 yuan, work for six months a year, and a total of 450000 yuan for five years;   专家咨询费：21万   1. Expert consultation fee: 210000   8次项目组会议，计划请12名评审专家，每人次的咨询费为0.24万元  For 8 project team meetings, it is planned to invite 12 review experts, and the consulting fee per person is 2400 yuan  共需8次×11人/次×0.24万/人/次=21万  8 times in total × 11 persons/time × 24000/person/time=210000  **二、其他来源资金**  **2、 Funds from other sources**  对其他来源资金主要用途、支出预算做简要说明。  Make a brief description of the main purpose and expenditure budget of funds from other sources. |
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