

## **Budget Justification**

### **Personnel and Benefits**

Funds are requested to provide 1 month of summer salary per year for the PI, Prof. Troy Carter and faculty Co-PIs Prof. Walter Gekelman and Prof. George Morales. Support for 11 months per year of Co-PI Dr. Steve Vincena is requested. Full-year support for other research staff, and the administrative and technical support staff is also included. The support staff consists of a Technical Director, a Project Scientist, an IT specialist, three full time technicians experienced engineer, and a facility administrator. As the facility supports some of the research of the local group, five full-time graduate students are included in the budget. The specific salaries and benefits for each individual are determined by strict guidelines set by the University of California and subject to rigorous review. Each listed salary is based on the individual's current level and increased each year for cost of living and merit increase (5% COLA for academic personnel, 4% COLA for staff, 7% for faculty merit increases which occur every few years). Benefits are the actual benefits of each employee. Fringe benefits are charged to all senior and other new personnel at a composite rate set by the Regents of University of California. PI and Co-I salaries are charged at a rate of 12.7%. Postdoc salary is charged at a rate of 19%. Meanwhile, the graduate student researchers are charged at 1.3% during the academic months and 3.0% during the summer months. Existing employee use actual rates. Benefit rates are increased 2% each fiscal year.

### **Equipment and Fabrication**

Each year there are funds allocated for continuing modification to current equipment. The actual needs in this category vary from year to year (e.g. repairing/replacing pump-down stations, mechanical and electrical components of the LAPD, etc.). Each year, equipment in support of user experiments and campaigns is designed and constructed by the BaPSF staff. The planned fabrication items are called out in the budget, but include plasma sources, amplifiers, high-power switches and probes. There is a budget item for replacement/upgrade of basic facility equipment (e.g., scopes, meters). This is necessary, as there comes a time when it is not cost effective to repair old equipment and it must be replaced. In the first year funds are requested to fabricate a new large area LaB<sub>6</sub> cathode source, including internal (to the vacuum chamber) magnets. The materials for fabricating the source will be purchased in the first year with construction continuing into the second year. Funds are requested for storage of data generated by BaPSF users and the local group. Experimental runs can generate up to 1 TB per week of data; continuous investment is needed to provide sufficient high-quality, backed-up storage space for data. In addition, funds for data analysis servers are requested. The servers are used both by the local group and by BaPSF users. Funds are requested for a new fiber-coupled spectrometer (and CCD) for Doppler spectroscopy of ions (helium, argon) for flow and ion temperature determination.

### **Travel**

The travel budget allows the PIs, research staff, and graduate students to attend major national scientific meetings such as APS-DPP and to participate in international meetings such as the International Conference on Plasma Physics (ICPP), the Interrelationship of Plasma Experiments in the Laboratory

and Space (IPELS), the Trieste Summer School on Plasma Physics and major topical workshops. Travel to these various meetings is necessary to present the work done at BaPSF to wide audiences and to fulfill the “Broader Impact” goals of the proposal.

## **Other Direct Costs**

The materials and supplies category includes funds for necessary small replacement parts as well as for electrical supplies. \$30k has been allocated for scientific publications as a result of this project. The additional direct costs include the following. There are three laser systems (two Nd:YAG lasers and a pulsed tunable dye laser) used in support of several experiments and for diagnostics. All the lasers must be kept under service contract, as a single repair on any of them equals the price of a year-long service contract. The lasers are fragile and usually break more than once a year. The service contract also includes a yearly alignment to bring the laser up to its quoted specifications. Participant support costs are requested in order to facilitate Campaign workshops and Users Group meetings at UCLA. One event per year (either a campaign workshop or the biannual on-site Users Group meeting) is envisioned.

The GSR fee remissions for the current academic year (2015-2016) are at \$15,440.48. An estimated 5% increase per year is applied. We request funds for GSR fee remission for 5 graduate students for three academic quarters on each year of this project.

<https://grad.ucla.edu/gss/library/1516remissionsgsr.pdf>

<https://grad.ucla.edu/gss/appm/gsr10stepscale.pdf>

The Technology Infrastructure Fee (TIF) is a consistently-applied direct charge that is assessed to each and every campus activity unit, regardless of funding source, including units identified as individual grant and contract awards. The TIF pays for campus communication services on the basis of a monthly accounting of actual usage data. These costs are charged as direct costs and are not recovered as indirect costs. TIF is based on a full time employee (FTE) and is calculated at \$33.28 per FTE per month.

## **Indirect Costs**

Facilities and Administration (F&A) costs are federally negotiated rate applied to projects as a percentage of the direct costs. The UCLA F&A rate on the Modified Total Direct Cost (MTDC) is 54%. MTDC consists of all salaries and wages, fringe benefits, materials and supplies, services, travel and the first \$25,000 of each subaward regardless of the period covered by the sub-grant or subcontract. Graduate student fee remissions, equipment over \$5,000, and participant support costs are excluded from MTDC. On April 27, 2011, the University of California and the United States Department of Health and Human Services (the responsible Federal audit agency) entered into a new facilities and administrative (F&A) cost rate agreement for UCLA. This agreement establishes facilities and administrative cost rates for the period July 1, 2010, through June 30, 2016. The F&A rate pertaining to this budget is 54% of Modified Total Direct Costs for on-campus research. A copy of the F&A rate agreement can be accessed at: [http://www.research.ucla.edu/ocga/Documents/F\\_A\\_Rate\\_Agreement\\_4-27-11.pdf](http://www.research.ucla.edu/ocga/Documents/F_A_Rate_Agreement_4-27-11.pdf).