

JSA Initiatives Fund Proposal Summary Sheet

Proposal title:		Support of ELIC Workshops	
<input checked="" type="checkbox"/> New proposal	<input type="checkbox"/> Renewal	Total funds requested	\$12,000.00
		Leveraged support / Matching resources	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If your proposal includes leveraged support or anticipates matching resources, identify source, amount, and secure the signature of an authorized representative of the source.			
Source/Amt Jefferson Lab, ~ \$3000		Authorized Signature:	
Source/Amt travel expenses of attendees / \$80000		Authorized Signature:	
Source/Amt		Authorized Signature:	

Principal Investigator (PI)		<u>Zein-Eddine Meziani, chair, Jefferson Lab Users Group Board of Directors</u>	
<input type="checkbox"/> JLab employee	Associate Director signature		
<input checked="" type="checkbox"/> JLab user	Name of university	<u>Temple University</u>	
<input type="checkbox"/> Other	Name of institution		
PI's Mailing Address		<u>Barton Hall A323, 1900 N. 13th St., Philadelphia, PA 19122</u>	
PI's Telephone / E-Mail		<u>215-204-5971 / meziani@temple.edu</u>	
Co-PI's (with affiliation)			

Executive summary including the projected begin/end dates.	
With construction having started on the 12 GeV upgrade to CEBAF, and the next Nuclear Physics Long Range Plan expected to be underway in 2012, the Users Group Board has concluded that it is time to promote a higher profile in activities towards the next-generation QCD physics facility beyond the 12 GeV upgrade, the EIC. At present the laboratory project being discussed as a next generation machine is the Electron Light Ion Collider, ELIC. Here, we request funds to facilitate holding workshops devoted to ELIC and the long term future of the laboratory.	
Synopsis of scientific, educational, technical, and/or business merits, and alignment with and significance to Lab's current programs. The aim of these meetings is to develop a long range scientific program for the laboratory, to help to establish its long term future. We believe that this effort is crucial towards establishing a long term future in nuclear physics for the laboratory.	
Proposed evaluation plan to measure success. If this is a request for renewal of funds, assessment of prior year performance. The current 2007 nuclear physics long range plan recommended funding to develop accelerator and detector technology for the EIC. We expect there will be an effort to further promote the EIC in the upcoming, likely 2012, long range plan. Currently, efforts to promote ELIC at JLab lag those to develop the eRHIC machine at Brookhaven. This initiative will be a success if the users community can upgrade the plans for ELIC so that they are at the same level as the plans for eRHIC at the time of the long range plan.	

Authorized signature for proposal from:	
JLab employee	Lab Director signature _____
JLab user	JLab Users Group Board Chair _____
Other	Institutional authorization _____

Office of SURA Chief of Strategic Services – Internal Use		
Proposal received:	Submitted for review:	Disposition:

Attachment A Technical Proposal – no more than 5 pages please. Up to 5 additional pages of letters of support, or other supporting materials may accompany proposal.
Attachment B Budget Proposal

Supporting Statement

Accelerator based physics programs can last for perhaps 10 – 15 years before the accelerator either has a major upgrade or is shutdown. For example, the Los Alamos meson factory ran from the last 1970s until the early 1990s before being shutdown. CEBAF will have run for about 15 years, from the mid 1990s, until the shutdown for the 12 GeV upgrade. Brookhaven's RHIC has run for about 10 years, and presently most of the elements of the RHIC II upgrade, for improved luminosity and detectors, are in place to be funded over the next few years. Since it typically requires about 15 years for a project to go from conception and its first mention in the Nuclear Physics Long Range Plan until the start of operation, now is the time to start serious work on the next generation machine for the “quantum chromodynamics” community. Recall that discussions justifying a higher energy CEBAF, that led eventually to the 12 GeV upgrade, started with meetings in 1994, with construction well underway but before the machine had delivered beam.

The most discussed next-generation machine is the electron-ion collider (EIC), which has already been discussed in the 2007 Long Range Plan, where funding was recommended for continued development of accelerator and detector capabilities. This machine is a natural continuation of the current RHIC and CEBAF investigations of nucleon structure. Its implementation has been in either of two variants in the US: eRHIC is based on adding an electron accelerator to the current RHIC machine, while the electron-light-ion collider ELIC is based on using the CEBAF beam to inject into a collider, along with a new proton machine. At most one of the new machines will be built, and there are competing ideas in Europe, such as the LHeC, colliding electrons with one of the LHC proton beams. For both proposed US machines the kinematics are roughly similar to the DESY positron-proton collider, but the luminosities are higher, and there are polarization capabilities. At present, the physics case is more developed for eRHIC, and the kinematics there are more extreme (higher Q^2 and W , and lower x), but ELIC offers the benefits of higher luminosity and stronger polarization capabilities.

With a new Long Range Plan expected in 2012, the much stronger existing eRHIC efforts supported by Brookhaven, and the previous mention of EIC in the 2007 Long Range Plan, it is possible that the 2012 plan will make a recommendation in favor of an EIC that already opts for the eRHIC implementation. Such a result would call into question the long range future of nuclear physics at Jefferson Lab. Thus, it is important to ramp up user efforts to identify the compelling physics issues that can be addressed by EIC. Then, if a choice is made by the Nuclear Physics community between the two suggested EIC options, it will be made based on investigation of the physics accessible with each machine, rather than on a strong effort by Brookhaven contrasted with almost no effort by the Jefferson Lab community. This effort could not have been commenced before now, because only recently has construction started on the 12 GeV upgrade.

In an effort to jump start user involvement in this effort, the Users Group is requesting funds to hold a series of workshops. Our plan is to recruit a number of obvious individuals from the community along with volunteers willing to work, to study a range of physics issues that might lead to “three star” experiments – compelling physics that justifies the high proposed luminosity and polarization of the ELIC design. Our current plan is for workshops centered on sea quark and gluon tomography of the nucleon, QCD effects in nuclei, and electroweak studies and physics beyond the standard model. While we are discussing with JLab management about additional topics, we plan to hold four workshops, and believe their exact nature will depend on the interests of the individuals we manage to recruit and who volunteer to work on the studies.

The plan is for these individuals to work on preparing the physics cases for several months, followed by workshops in spring 2010. Refined physics cases will be presented in the 2010 Users Meeting in June 2010. The community will then be set for more discussions so that white papers can be prepared in advance for input to the Long Range Plan in 2011.

Our request is for \$3000 support for each of four workshops. We have had initial discussions about holding workshops in Spring 2010 on *3D Mapping of the Glue and Sea Quarks in the Nucleon* at Rutgers, *Nucleon Spin and Quark-Gluon Correlations*:

Transverse Spin, Quark and Gluon Orbital Momentum, Semi-Exclusive processes at UVa, Hampton, or JLab 3D Tomography of Nuclei, Quark/Gluon Propagations and the Gluon/Sea Quark EMC Effect at Argonne, and Electroweak Structure of the Nucleon and Tests of the Standard Model at UMass or UVa. In addition we expect there to be a workshop on *EIC Dectectors / Instrumentation* at JLab. We would prefer not to have to have registration fees for these workshops, so the money will go towards local expenses of holding the meetings such as room or AV rental if required, name tags, coffee breaks, and partial support of the travel of a few speakers. We anticipate that each meeting will have 20 – 30 people, and last 2 – 3 days. Note that travel expenses are often several hundred dollars for a trip within the US (air fare, rental car, hotel, meals, etc.), so the request for JSA support will be matched several times over by the travel expenses of participants, which are about \$20,000 per workshop.



Jefferson Science Associates, LLC

Thomas Jefferson National Accelerator Facility

JSA Initiatives Fund Proposal
Attachment B - Budget Proposal

	Item Description	Amount
* Salary	_____	_____
	_____	_____
	_____	_____
* Fringe Benefits		_____
		Subtotal Salary & Fringes
Equipment	_____	_____
	_____	_____
	_____	_____
		Subtotal Equipment
Travel	_____	_____
	_____	_____
	_____	_____
		Subtotal Travel
Supplies	_____	_____
	_____	_____
	_____	_____
		Subtotal Supplies
Consultants/Subcontracts	_____	_____
	_____	_____
	_____	_____
		Subtotal Consultants/Subcontracts
Other Expenses (including * Indirect Costs)		
	Support for 4 workshops	12000
	_____	_____
	_____	_____
		Subtotal Other Expenses
		\$12,000.00
Total Budget Proposal		12000

* Note: The Initiatives Fund is not intended for salary support or for the payment of indirect costs, and the inclusion of these costs in a proposal will be a factor in the evaluation for award.

<p>Budget Justification We plan to hold four workshops, each lasting 2 – 3 days, with 20 – 30 participants. We plan to have no registration fees. The costs will vary for each workshop depending on location, but we are budgeting \$400 for local expenses (AV or room rental, name tags, etc), \$1000 for coffee breaks, and \$1600 to partially support 3 – 4 participants to attend the workshops. At this point the planning is not detailed enough to know the breakdown for individual meetings, and we would prefer to be able to use the funds with some flexibility – e.g., some workshops might require less, but some might require more.</p>