



The Science of Collaborative Research

2019 ANNUAL REPORT





On behalf of SURA, I am proud to present our SURA 2019 Annual Report, which provides a brief look at our accomplishments from the past year. As a consortium for collaborative research, our

success is that of our member institutions who share in the belief that research partnerships serve to grow individual programs while strengthening the scientific capabilities of our region and the nation.

While we were disappointed to learn in early 2020 that the Electron Ion Collider would be sited at Brookhaven National Lab instead of Jefferson Lab, we are proud of the lab's leadership and our own efforts to support the launch of a major, next generation scientific enterprise. And the bright side is that the Department of Energy expects Jefferson Lab and our New York colleagues to come together in a true partnership focused on achieving the best design, functionality, and performance of an important new world-leading nuclear physics facility, at a construction cost of \$1.6 to \$2.6B over the next decade.

We are likewise proud of our coastal and environmental research program, which has turned its focus to coastal resiliency. The goal is to improve our understanding and forecasting of coastal-ocean events and enhanced public communications paradigms for prediction of urban flooding and related socioeconomic impacts. Similarly, the major effort with our information technology program is helping lead the National Science Foundation's XSEDE

program for minority servicing institutions. By reaching out to researchers at these institutions, SURA is helping underserved communities gain access to advanced cyberinfrastructure. Finally, in the past few years, SURA has expanded its partnership with the NASA community through two important programs: the CRESST II program at Goddard Space Center and the Laboratory Support Services & Operations (LASSO) program at the Kennedy Space Center. Through these programs, a growing number of researchers from SURA institutions are gaining access to state-of-the-art NASA resources that no single institution acting on its own can provide.

These programs and accomplishments are summarized in the *SURA 2019 Annual Report*. I hope that you not only share my pride in these hallmarks, but also see them as inspiration to engage with us as we continue to tackle the "science of collaboration" with our members.

Sincerely,

Jerry P. Draayer
President and CEO

SURA's mission is to advance collaborative research and education and to strengthen the scientific capabilities of its members and our nation.

Jefferson Science Associates, LLC



JSA Initiatives Fund Program

The JSA Initiatives Fund Program supports projects, initiatives, and activities that further the scientific outreach of Jefferson Lab. Funded annually by JSA owners – SURA and

PAE Applied Technologies – the program has provided over \$6.2 million to support over 390 projects since 2006. The majority of the funds benefit the lab's extended user community in ways that complement the lab's basic and applied research missions.

The 2019 IF Program included 32 new awards totaling \$400,000, with over \$600,000 of contributing funds from other sources, enabling maximum leveraging of dollars spent in the program. Sixty percent of the awarded funds supported educational and outreach activities at the lab. The remaining funds went toward support for meetings, workshops, and conferences; and other initiatives and activities of the lab community.



FIRST Robotics Team, supported by JSA Initiatives Funds.

In 2019, three dozen college students and lab researchers were awarded fellowships, honoraria, stipends, and prizes from the Initiatives Fund. The program supported over 175 students and young researchers to participate in scientific meetings at which they presented results of their Jefferson Lab research. The IF Program continued its commitment to STEM education through the award-winning JLab Science Activities for Teachers (JSAT) program and support for FIRST Robotics Team competitions.

"The Initiatives Fund is an important investment by JSA to support lab projects and activities that contribute to the advancement of the lab's mission," said Jefferson Lab Director Stuart Henderson. "The program is recognized for its impact on the education and training of the next generation of science leaders through its fellowships, postdoc research grants, and K-12 projects. Over the years, students of all ages and young researchers have had the unique opportunity to interact with the Jefferson Lab community both on-site at the lab and at scientific conferences."



Distinguished Professorship Awarded to Andrei Seryi

The SURA Governor's Distinguished CEBAF Professorship review committee (presidents of William & Mary, Virginia Tech, University of Virginia, Old Dominion University, and Virginia Commonwealth University) confirmed the appointment of Jefferson Lab associate director for accelerator

operations, research and development Andrei Seryi as a Governor's Distinguished CEBAF Professor at Old Dominion University. Seryi was nominated by Lab Director Henderson with strong support from prominent physicists familiar with his work. Seryi's appointment further enhances Jefferson Lab's visibility in and collaboration with the Virginia university community. His international reputation in accelerator physics, coupled with this academic appointment, will further enhance the Lab's core capability in accelerator science and technology.

The GDCP/GCS program, in place since the mid-1980's, enables the Lab to attract distinguished, uniquely qualified individuals to join the leadership team. Seryi is the fifteenth individual to have been awarded GDCP or GCS honors, and the second appointee hosted by Old Dominion University.

Information Technology

Campus Research Computing

The IT Steering Group focused on supporting research computing at the campus level – a continuation of the development of IT Best Practices. The effort began with the creation of research technology service maps at several member institutions using a planning tool developed by George Washington University. The research service maps assisted the participating institutions in gaining a comprehensive view of all of their research services and how those services are interconnected. The effort transitioned to the examination of funding models for campus research computing. Previous best practices guides – *Process and Procedures for Assessing Third Party Software & Service Providers* and *IT Incident Response Plan Template* – released by the SURA IT Steering Group, continue to be downloaded and requested via email.



XSEDE booth at the SACNAS 2019 National Conference.

NSF Funded XSEDE Workforce Development

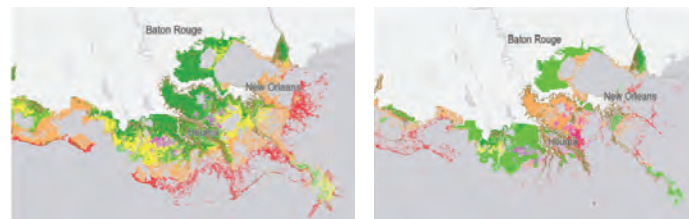
Vital to the nation’s ability to innovate and make breakthrough discoveries is the broad adoption of advanced computing and computational and data science. SURA’s leadership of XSEDE’s Workforce Development program – which includes broadening participation, education, student and training programs – focuses on increasing the use of advanced computing services by a broader community of researchers and training the next generation of researchers. The incorporation of computational and data science into teaching and the adoption of advanced computing into research practices, builds capacity at underserved institutions and within new user communities. As an XSEDE partner, SURA’s activities in this area are funded by the National Science Foundation.

Coastal & Environmental Research

Coastal Resilience Initiative

In 2019, SURA continued to promote a Consortium for Coastal Resilience. SURA’s coastal team led a multi-national white paper entitled *Collaborative Science to Enhance Coastal Resilience and Adaptation* that was published in *Frontiers in Marine Science* in July. The primary goal of SURA’s coastal resilience initiative is to improve understanding and forecasts of future urban inundation and related socioeconomic vulnerabilities.

To guide the ongoing pursuits, the team has prepared a prospectus summarizing SURA’s coastal achievements and outlining SURA’s vision for a “Collaborative Coastal Resilience Network.” After a series of two-day planning meetings held at the University of South Florida, and deliberations at SURA’s Spring and Fall Coastal and Environmental Research Committee meetings, they identified the core of a multi-disciplinary team, including social scientists, to address the goals of this network. The program focus for 2020 and 2021 will be on *Assessing and Planning for the Impacts of Storms and Flooding on Vulnerable Gulf of Mexico Coastal Communities*.



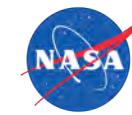
Left image: Landscape of coastal Louisiana in 2017.
Right image: Projected landscape of coastal Louisiana in 2050.
(Dark green – forest & swamp; light green = freshwater marsh; orange = brackish marsh; red = salt marsh)

Focus On Wetland Loss Reclamation

SURA’s coastal team has 15 years of experience in testing and refining numerical models for predicting storm impacts on coasts. The team is now turning its attention to how such events may impact coastal communities and how the communities can better prepare for and adapt to such events. For example, the present rate of Louisiana’s wetlands loss is around 16 square miles per year, and accelerating. The Louisiana Coastal Protection and Reclamation Authority projects that by 2050, without reclamation, most of the wetlands will have been replaced by open water.

Space Science & Technology

SURA Continues Collaboration with CRESST II



The Center for Research and Exploration in Space Science & Technology (CRESST II), a five-year, \$87.5 million cooperative agreement with NASA’s Goddard Space Flight Center in Maryland, was awarded in March 2017 to the University of Maryland–College Park and its four partners: the University of Maryland–Baltimore County, Catholic University of America, Howard University, and SURA.

First created in 2006, this phase of the program facilitates collaborations between NASA researchers and space scientists from CRESST II partner institutions. Priorities are to carry out observational, experimental, and theoretical research in support of Goddard’s Sciences and Exploration Directorate, including the study of the solar system, stars, galaxies, and the universe at large.

SURA is the lead institution in recruiting and attracting visiting scientists and sabbatical researchers to enable and facilitate NASA collaborations with the greater scientific community. It administers the summer internship program; coordinates scientist program travel and consulting; and facilitates scientific colloquia, workshops, conferences, and other program support. SURA led planning for the 2019 SEEC Symposium, which attracted 140 theoretical and observational astrophysicists from 12 countries with an interest in studying rocky exoplanets with the James Webb Space Telescope.

LASSO Contract at Kennedy Space Center

The Laboratory Services and Support Operations (LASSO) contract at NASA’s Kennedy Space Center (KSC) operates and maintains a diverse set of operational and research laboratories that span a wide range of disciplines, many of which may not be traditional NASA specialties, including plant biology, geology, mechanical engineering, surface science, and material science. The total potential value of the contract is approximately \$69.4 million.

SURA is a subcontractor to AECOM on the LASSO contract and fills the role of involving academic researchers and other subject matter experts in KSC’s scientific research and engineering activities. SURA has developed a Master Agreement contract, available to all SURA member universities, to facilitate engagement of academic researchers in short-term research with KSC. We enable multiple opportunities, such as sabbaticals and post-doctoral fellowships, especially in LASSO strength areas of plant biology, engineering, and chemistry. In March, SURA organized a full day at Kennedy Space Center for members to learn firsthand more about LASSO.

Public Affairs

Commonwealth Funds CNF

Started with \$1 million in the 2018-20 biennial budget, this science makes it possible to map out the spatial distribution and motion of the quarks and gluons, within the nucleus at the sub-femto-scale. While the science is complementary to that of the EIC, it will distinguish JLab in pioneering research. After an inaugural symposium in late 2018, the program has grown to involve nine Virginia universities by funding collaborative projects.

This special funding from Virginia comes in addition to roughly \$1.2 million annually in general support.

Outreach and Advocacy Grow



To demonstrate support for Jefferson Lab from the business community, SURA hosted a summit in early 2019 of regional and state civic and private sector leaders. The result was formation of the Friends of Jefferson Lab. While its establishment did occur in the run-up to the EIC competition, the group’s goal is to support the lab’s future by advocating their interests. The coalition hopes to advance the educational, technological, and economic benefits resulting for the Greater Hampton Roads area and Virginia. (www.friendsofjlab.org)

SURA continued to engage fellow nuclear physics labs in advocating for funding from DOE’s Office of Science. In March, SURA co-sponsored the 7th Nuclear Physics Day on Capitol Hill.



Two Researchers Named SURA Distinguished Scientists

Two prominent scientists from SURA schools were presented the 2019 SURA Distinguished

Scientist Award: Randy D. Blakely, a neuroscientists from Florida Atlantic University and Executive Director of FAU’s Brain Institute; and Akhil Datta-Gupta, a petroleum engineer from Texas A&M University. The annual awards, and its \$5,000 honorarium, go to research scientists whose extraordinary work fulfills the SURA mission to “advance collaborative research and education.” The presentations were held at the SURA Board of Trustees meeting March 28-29 at Georgia Tech.

Consolidated Statement of Financial Position

ASSETS	2019 *	2018
Cash	\$ 4,430,189	\$ 3,462,745
Accounts receivable, net	20,753,385	22,822,546
Investments, net	20,008,704	21,684,611
Property Plant Equipment, net	1,059,378	1,051,037
Other Assets	495,626	428,245
Total Assets	46,747,281	49,449,184
LIABILITIES		
Accounts Payable and Accrued Expenses	\$ 17,860,807	\$ 19,529,833
Deferred Revenues	5,496,092	5,634,700
Deferred Rent	251,397	326,331
Other Liabilities	7,909,373	7,900,000
Total Liabilities	31,517,669	33,390,864
EQUITY		
NET ASSETS	\$ 15,229,612	\$ 16,058,320
Total Liabilities and Net Assets	46,747,282	49,449,184

Consolidated Statement of Activities

REVENUES	2019 *	2018
DOE Contract Revenues	\$ 155,775,836	\$ 167,033,560
DOE Management Fees	3,033,085	3,033,085
Grants Revenues	3,440,194	3,151,437
Commonwealth of Virginia Funding	1,415,804	2,335,426
Membership Dues	347,500	348,625
Other Revenues	1,847,491	1,835,118
Total Revenues	165,859,910	177,737,251
EXPENSES		
Salaries and Fringe Benefits	\$ 94,884,325	\$ 92,130,655
Operating and Other Expenses (1)	73,219,619	87,512,195
Total Expenses	168,103,945	179,642,850
Operating (Loss) Income	\$ (2,244,035)	\$ (1,905,599)
Non-operating Income from Investments	1,341,147	2,741,758
Change in Net Assets Without Donor Restrictions	(902,888)	836,159

Note 1: SURA's consolidated operating expenses include as a cost of operations PAE's 40% share of JSA LLC's net income with was \$74,180 and \$531,935 in FY19 and FY18 respectively.

* = Unaudited



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SURA

SURA is a consortium of 60 universities with a mission to advance collaborative research and education and to strengthen the scientific capabilities of its members and our nation. It was established as the Southeastern Universities Research Association in 1980 to design, build, and operate what is now Thomas Jefferson National Accelerator Facility – a U.S. Department of Energy science laboratory. We now operate the lab through Jefferson Science Associates (JSA) – a SURA/Pacific Architects and Engineers (PAE) joint venture. SURA also facilitates collaboration with government agencies and researchers to advance information technology, understanding of coastal and environmental phenomena, space science and technology, and to promote scientific discoveries that impact our lives.

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