Sam Aronson – in Memoriam

presented at the

2026 RHIC/AGS Annual Users' Meeting
Brookhaven National Laboratory

May 15th, 2026

W.A. Zajc
Columbia University

Profound thanks to Joe and Rachel Aronson,
Yasuyuki Akiba, Tamas Csörgő, Hideto Enyo, Yuji Goto, Wlodek Guryn,
John Haggerty, Edward Kistenev, Shoji Nagamiya, Ed O'Brien, Jeanette Russo,
Keiko Suzuki and Itzhak Tserruya

This work was supported by the United States Department of Energy Grant DOE-FG02-86ER-40281

See also: AIP Oral History Interview with Sam: https://repository.aip.org/node/129568

I worked very closely with Sam for nearly a decade as we were building and then operating the PHENIX experiment at RHIC.

For much of that time, I was Spokesperson and Sam was the Project Director.

I could not have asked for a better colleague, mentor, and friend.

These are not just my sentiments, they are shared by all who knew this extraordinary man.

Sam's word-line

- 1942: Born, Huntington, NY
- 1964: A.B., Columbia
- 1968: Ph.D., Princeton
- 1968: Postdoc, Chicago
- 1972: Faculty, Wisconsin
- 1978: BNL
- 1988: Deputy Chair, Physics
- 1991: RE2/PHENIX Director
- 2001: Chair, Physics
- 2005: ALD for NPP
- 2006: Director
- 2012: Stepped down as Director
- 2013: RBRC Director
- 2015: APS President

Sam's word-line

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Department of Physics
SUNY-Stony Brook
Stony Brook, NY 11794-3800

Prof. S. Nagamiya
Department of
Columbia U
538 West
New Y , NY

Dear Peter, Shoji and Glenn:

This is to confirm the discussion we had on Tu
made by the Program Advisory Committee with respect to your RHIC Letters of Intent.

1. The Committee decided to reject all three of the Letters of Intent because of what were felt to be major deficiencies in each of them.

2. The Committee decided to place the emphasis on a detector designed to study electrons and photons emerging from the QGP. In this regard, it will address some of the basic physics interests of each of your groups.

3. The Laboratory has appointed Sam Aron
charge of dev a new collaboration
urge each of you and current respec
of you who are primarily
collaboration which has been empow

4. The Laboratory is prepared to contribute a
of this detector. Hopefully, you can find
this sum.

5. It is hoped that the new collaboration c
Advisory Committee in mid December. Sam Aronson will have final authority as to the technical and scientific content of the proposal. He is in the process of forming an advisory committee composed primarily of the leadership of the three former collaborations to assist in the conceptual design

Although I realize that each of you is very disappointed, I hope that you will find it possible to become a part of this effort. We need all of you in order to maximize our probability of success.

Sincere
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MS:laz
cc: HENP PAC Membership

TELEX: 6852516 BNL UOF FACSIMILE: (516)

"reject all three Letters of Intent because of what were felt to be major deficiencies in each of them."

"The Laboratory has appointed Sam Aronson as Spokesman and Project Director."

"The Laboratory is prepared to contribute at most $30 million to the design and construction of this detector.

September 1991:

- RE2 = RHIC Experiment #2 was created/mandated
- Sam made hundreds of wise decisions in leading this budget-constrained, time-constrained project to spectacular success as the PHENIX experiment.

- The wisest of these: Appointing Shoji Nagamiya as spokesperson.

Sam played a central role in shaping and supporting this joint effort.

I recall many occasions when I discussed physics and plans with him—at BNL, on boat outings, over meals at restaurants, and at his home during those days. His insight, leadership, and warm personality left a lasting impression on me.

Preparing (a recent) lecture

brought back many fond memories from the time of the collaboration's birth.

These memories remain very vivid.

Please accept my heartfelt condolences. I pray that he may rest in peace.

Shoji Nagamiya


1997: A very fraught process transforming this . . .

2002 . . . to this

Some Hints of the Challenges PHENIX Faced

I am deeply saddened by the passing of Sam Aronson.

I met Sam almost 30 years ago when I joined PHENIX and was immediately impressed by his unique personality. . . I admired the way he managed the numerous long-day meetings, with exceptional calm, taking notes and going deeply into every detail, always demonstrating excellent judgment. I think we owe him special thanks for the fact that PHENIX was ready to take data on day 1 of RHIC. Sam was unassuming, a good man, and a superb science manager. I always enjoyed meeting him and discussing science and much more with him. . ..

Sam will be sorely missed.

Itzhak Tserruya

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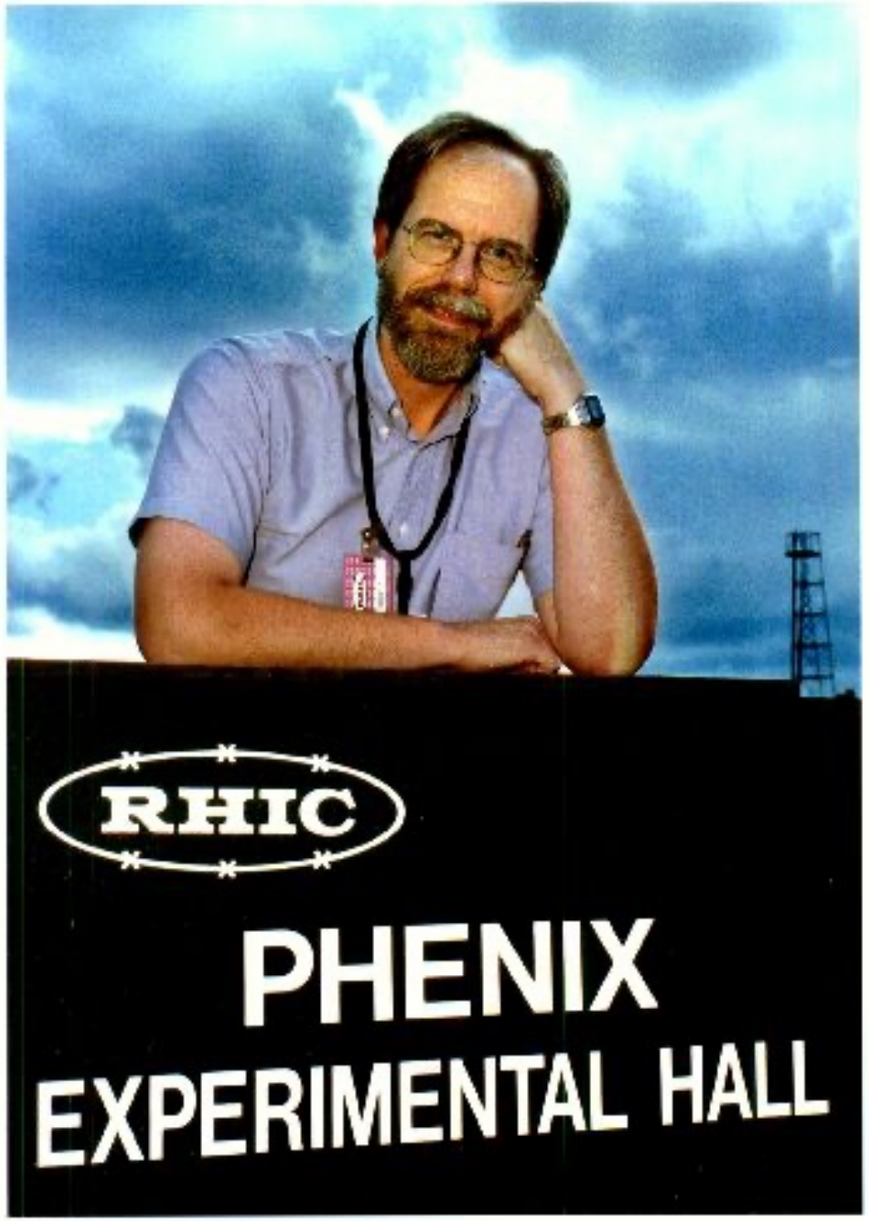


My most vivid memories of Sam are of a man who without fail treated people with respect and dignity, even in the most trying of circumstances. And circumstances were often pretty trying.

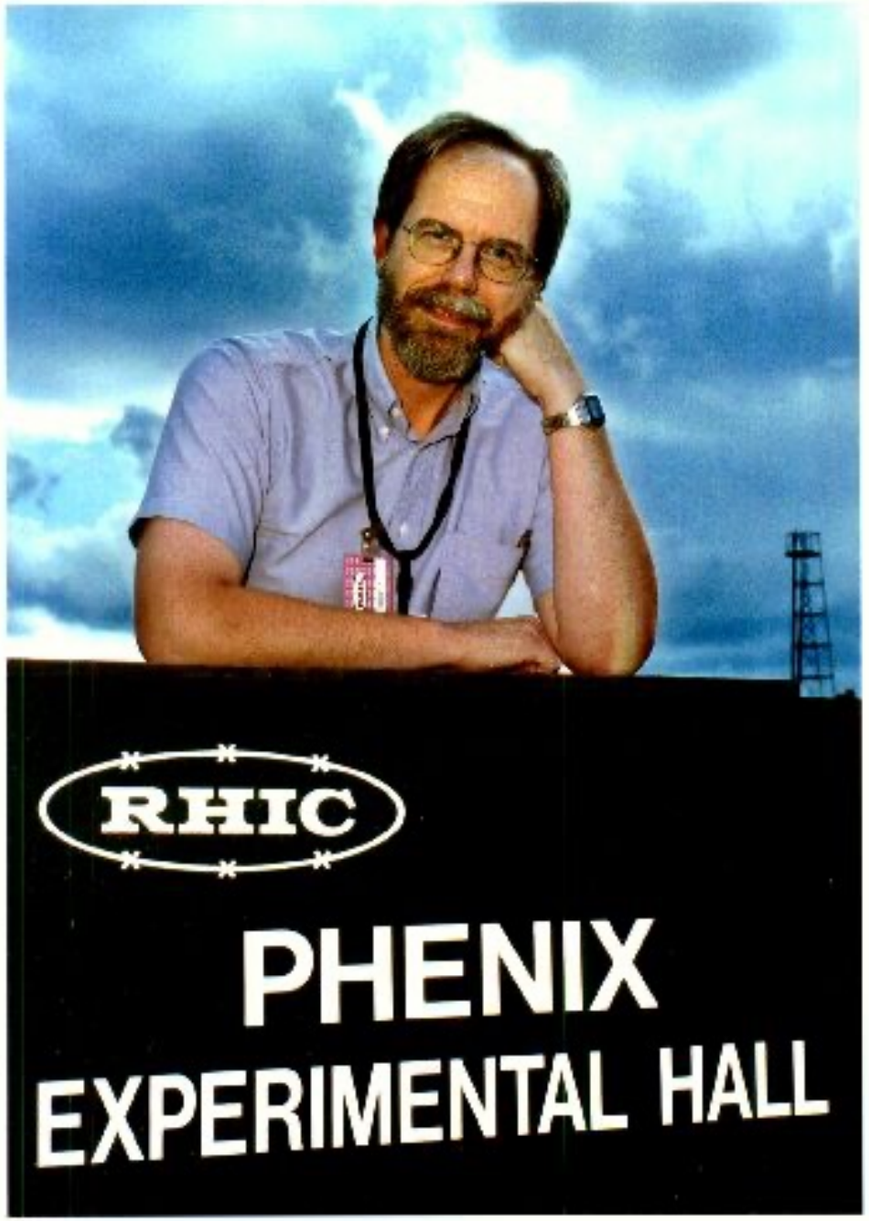
My happy years on PHENIX were in many ways due to Sam, and I think he was able to get the best work from people partly by his ability to overlook their faults and foibles.

Possibly the most valuable lesson he taught me was to admit challenges and problems and your own uncertainty. . . In this way, he extracted from the collective consciousness the best (or least bad) alternative. I hope I adopted that same approach to working with people, but Sam was the master.

Rest in peace, Sam.

John Haggerty

Some Hints of the Challenges PHENIX Faced



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Rest in peace, Sam.

John Haggerty

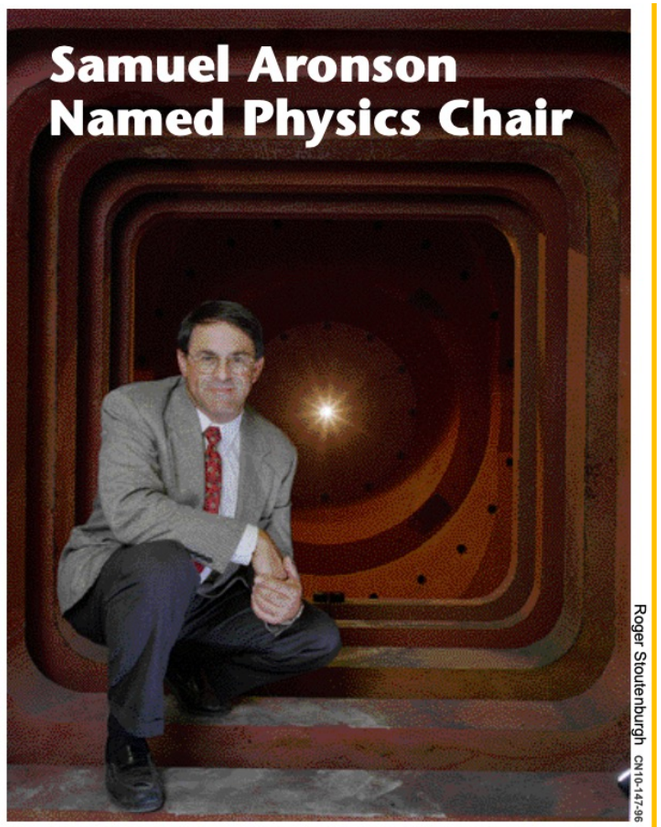
Sam’s favorite forms of stress management


Sam’s true source of strength

October 2000

Division of Nuclear Physics Meeting, Williamsburg, VA

We are smiling because we knew that PHENIX had taken quality and important data in the first RHIC run!



BNL Senior Physicist Samuel Aronson has been named Physics Department Chair. Until assuming the Chair, Aronson had been the Project Director of PHENIX, one of the five detectors at BNL's Relativistic Heavy Ion Collider (RHIC).

In appointing Aronson to his new position, BNL Director John Marburger said, "Sam Aronson has exhibited strong leadership and good judgment in his work. At the same time, his thoughtful and considerate personality and his comfortable interactions with people have resulted in widespread support for his new role in the Physics Department."

The Department is the headquarters of three of the four major nuclear-physics experiments at RHIC: BRAHMS, PHENIX and STAR. On the four experiments, about 1,000 physicists from worldwide rely on the heavy-ion beams at RHIC to create quark-gluon plasma, a form of hot, dense matter that last existed moments after the Big Bang.

September 2001

In this role as Physics Chair, Sam would play an *outsized role* in developing the RHIC physics program and its results.

My message to him as he was attempting to decouple from PHENIX:

"From a legal standpoint, you are the person most vested in PHENIX. That this is also true technically and scientifically is a tribute to your dedication and leadership over the past 15 years. That you managed to prop up a new and inexperienced spokesperson during some significant fraction of that time only adds to the luster of your accomplishments."

Like Particles, 2 Houses of Physics Collide

By JAMES GLANZ
Published: January 20, 2004

OAKLAND, Calif., Jan. 14— MARCELLUS What, has this thing appear'd again to-night?

BARNARDO I have seen nothing.

-- "Hamlet," Act I, Scene 1

A bland and bulky conference center in this city's fogbound downtown was transformed in recent days into the Elsinore of particle physics. The ghost that continually appeared, disappeared and appeared again during a scientific meeting was not the shade of a murdered king but a puff of primordial matter with an otherworldly name: the quark-gluon plasma.

This drama, like the original, involved not only a clash of great forces but also what some saw as betrayal and a measure of revenge. It drew in a pair of renowned laboratories -- two great houses of physics -- that have avidly pursued what may be among the most important discoveries in science.

Most of all, the meeting was a forum for one of those institutions, Brookhaven National Laboratory, to play Hamlet, earnestly raising doubt after doubt about the meaning of its own data: the laboratory's scientists refused to acknowledge that they had created the plasma, even though it would be hard to find a physicist anywhere who seriously argued that the lab had blundered and failed in its quest.

Quark Matter 2004

In handling this issue Sam played an *essential* role as the "diplomatic envoy" between senior lab personnel and the 4 RHIC experiments:

12-Feb-04 email message

"More on the RHIC Science Retreat"

from Sam
to Tim Hallman and WAZ:

I told XX et al. that I felt like I was going out of a Mafia meeting with instructions to set up a meet with the other Family.

April 13, 2005:

Sam was appointed as
Associate Laboratory Director (ALD)
for Nuclear and Particle Physics:

"We're seeing some of the worst budgets and budget forecasts in a very long time. The challenge is to maintain and advance a compelling science program at Brookhaven Lab in the face of these decreased budgets."

Sam Aronson

Contact: Karen McNulty Walsh, (631) 344-8350, or Peter Genzer, (631) 344-3174

RHIC Scientists Serve Up 'Perfect' Liquid

New state of matter more remarkable than predicted — raising many new questions

April 18, 2005

TAMPA, FL — The four detector groups conducting research at the Relativistic Heavy Ion Collider (RHIC) — a giant atom "smasher" located at the U.S. Department of Energy's Brookhaven National Laboratory — say they've created a new state of hot, dense matter out of the quarks and gluons that are the basic particles of atomic nuclei, but it is a state quite different and even more remarkable than had been predicted. In peer-reviewed papers summarizing the first three years of RHIC findings, the scientists say that instead of behaving like a gas of free quarks and gluons, as was expected, the matter created in RHIC's heavy ion collisions appears to be more like a *liquid*.

"Once again, the physics research sponsored by the Department of Energy is producing historic results," said Secretary of Energy Samuel Bodman, a trained chemical engineer. "The DOE is the principal federal funder of basic research in the physical sciences, including nuclear and high-energy physics. With today's announcement we see that investment paying off."

Secretary of Energy Samuel Bodman

"The truly stunning finding at RHIC that the new state of matter created in the collisions of gold ions is more like a liquid than a gas gives us a profound insight into the earliest moments of the universe," said Dr. Raymond L. Orbach, Director of the DOE Office of Science.

Also of great interest to many following progress at RHIC is the emerging connection between the collider's results and calculations using the methods of string theory, an approach that attempts to explain fundamental properties of the universe using 10 dimensions instead of the usual three spatial dimensions plus time.

April 18, 2005:

Announcement of the “perfect liquid” discovery:

"The possibility of a connection between string theory and RHIC collisions is unexpected and exhilarating," Dr. Orbach said. "String theory seeks to unify the two great intellectual achievements of twentieth-century physics, general relativity and quantum mechanics, and it may well have a profound impact on the physics of the twenty-first century."

Dr. Raymond L. Orbach

The papers, which the four RHIC collaborations (BRAHMS, PHENIX, PHOBOS, and STAR) have been working on for nearly a year, will be published simultaneously by the journal *Nuclear Physics A*, and will also be compiled in a special Brookhaven report, the Lab announced at the April 2005 meeting of the American Physical Society in Tampa, Florida.

These summaries indicate that some of the observations at RHIC fit with the theoretical predictions for a quark-gluon plasma (QGP), the type of matter postulated to have existed just microseconds after the Big Bang. Indeed, many theorists have concluded that RHIC has already demonstrated the creation of quark-gluon plasma. However, all four collaborations note that there are discrepancies between the experimental data and early theoretical predictions based on simple models of quark-gluon plasma formation.

"We know that we've reached the temperature [up to 150,000 times hotter than the center of the sun] and energy density [energy per unit volume] predicted to be necessary for forming such a plasma," said Sam Aronson, Brookhaven's Associate Laboratory Director for High Energy and Nuclear Physics. But analysis of RHIC data from the start of operations in June 2000 through the 2003 physics run reveals that the matter formed in RHIC's head-on collisions of gold ions is more like a liquid than a gas.

Sam Aronson

That evidence comes from measurements of unexpected patterns in the trajectories taken by the thousands of particles produced in individual collisions. These measurements indicate that the primordial particles produced in the collisions tend to move collectively in response to variations of pressure across the volume formed by the colliding nuclei. Scientists refer to this phenomenon as "flow," since it is analogous to the properties of fluid motion.

However, unlike ordinary liquids, in which individual molecules move about randomly, the hot matter formed at RHIC seems to move in a pattern that exhibits a high degree

April 18, 2005:

Announcement of the “perfect liquid” discovery:

We know that we've reached the temperature (up to 150,000 times hotter than the center of the sun) and energy density (energy per unit volume) predicted to be necessary for forming such a plasma.

This is fluid motion that is nearly perfect. In fact, the degree of collective interaction, rapid thermalization, and extremely low viscosity of the matter being formed at RHIC make this the most nearly perfect liquid ever observed.

- Sam Aronson

Press Event at April 2005 APS Meeting

August 8th, 2005

Sam as ALD
presenting his talk

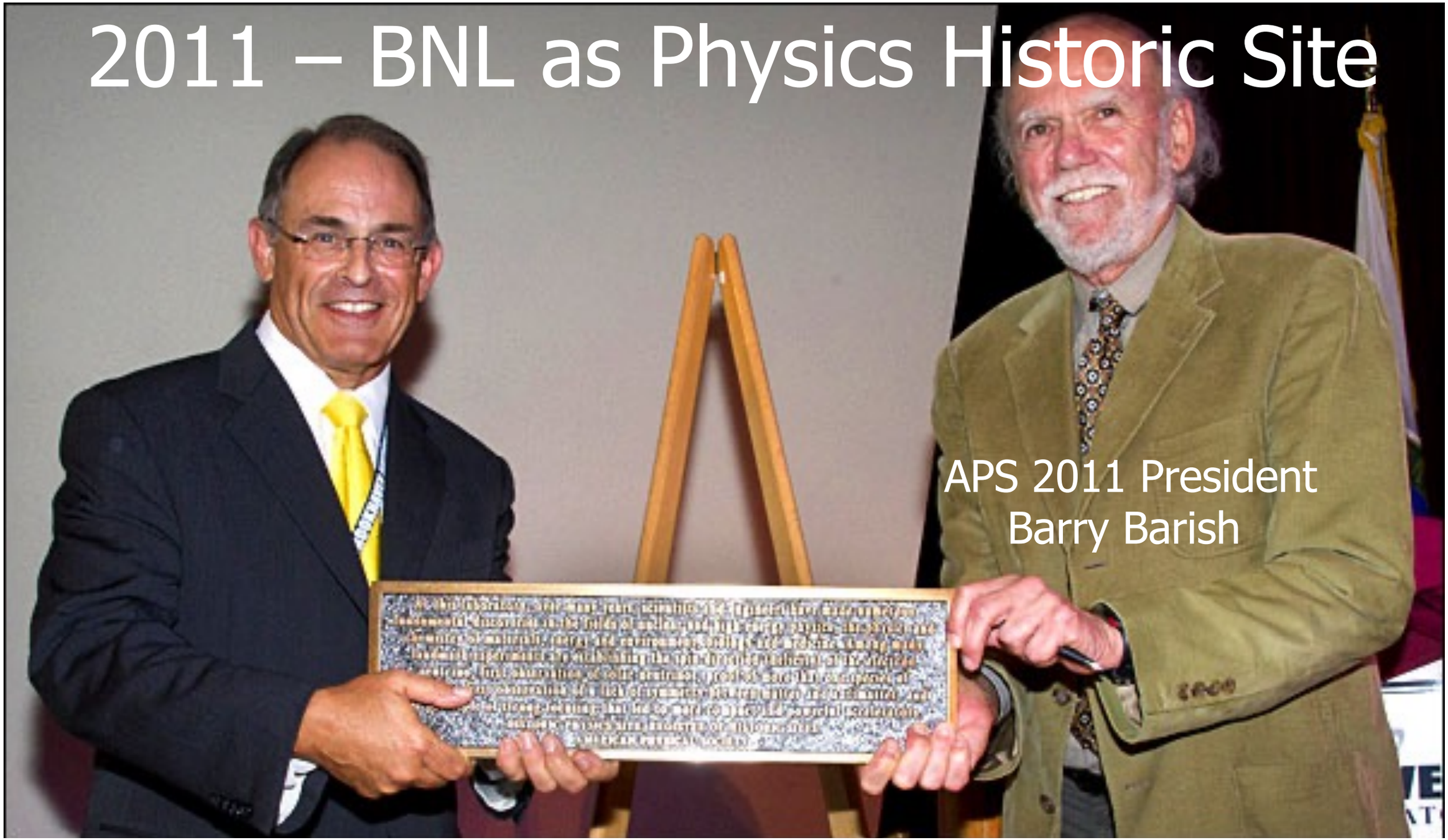
The Future of RHIC

at Quark Matter 2005

“long term” - eRHIC

2009 – Sam returns to PHENIX

2011 – BNL as Physics Historic Site



2012 – Signing Updated RBRC Agreement

2015 President of American Physical Society

I was so sorry to hear of Sam's passing.

I met him on several occasions through the Panel on Public Affairs in the DC office, and he was always pleasant to work with.

He . . . was on the Presidential Line from 2013–2016. That was right around the time of Corporate Reform . . . Sam led during the years immediately following those governance changes, navigating a new structure that I think has served APS very well over the past decade.

Jeanette Russo
APS Corporate Secretary

March 25, 2022

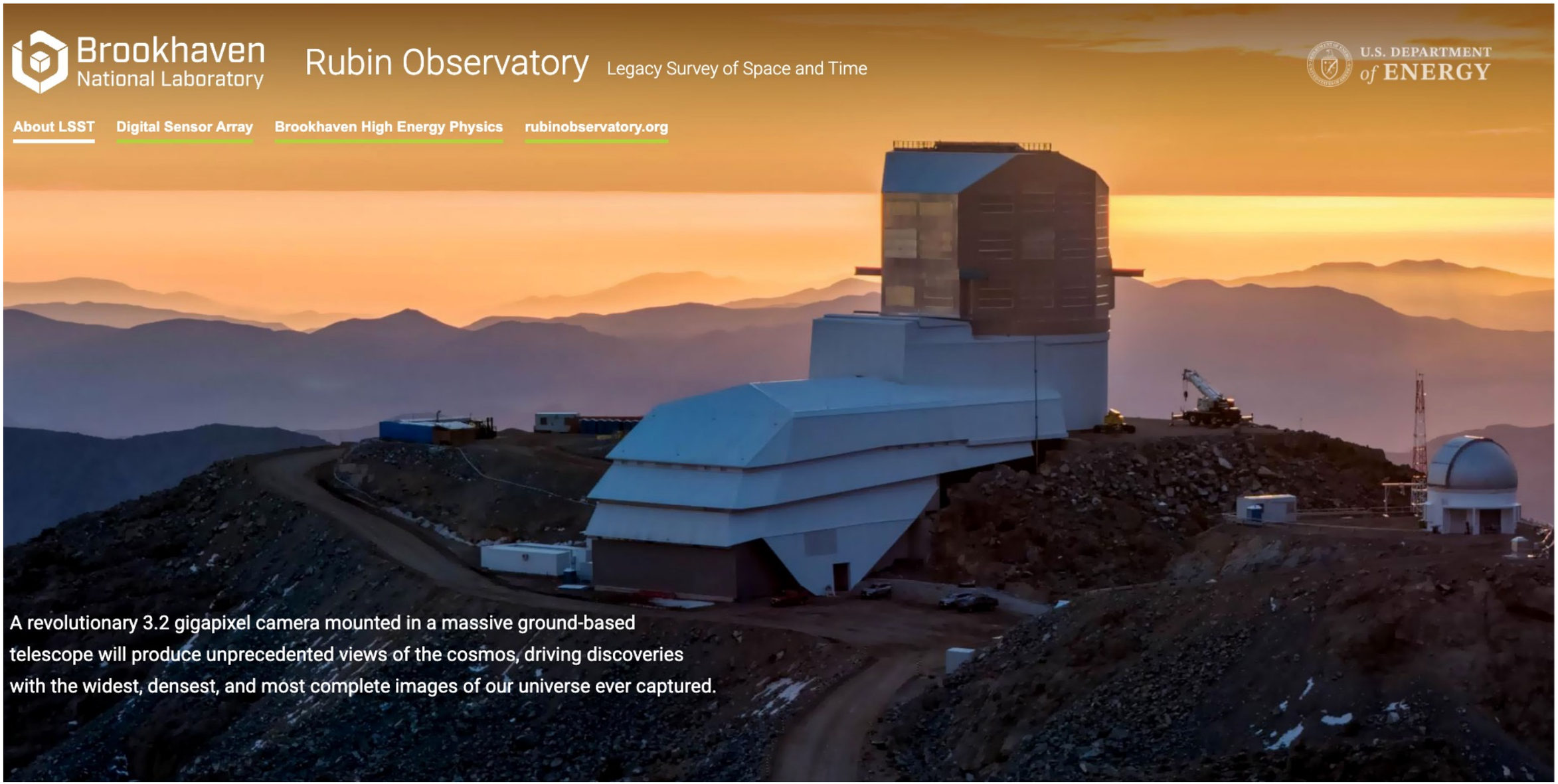
Sam and Edward Kistenev

Losing a person of Sam's caliber is a tragedy for everyone whose life he touched. I am humbled, saddened, and trying to gather and preserve these memories. . .

I pray that he may rest in peace.

Edward Kistenev

One of Sam's Many Legacies



One of Sam's Many Legacies

Brookhaven National Laboratory

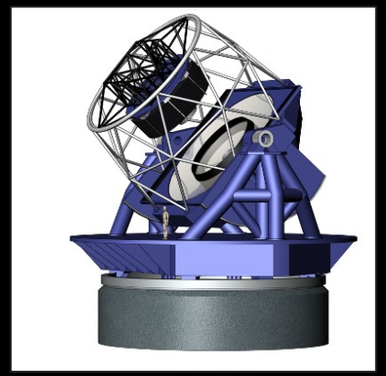
About LSST | Digital Sensor Array

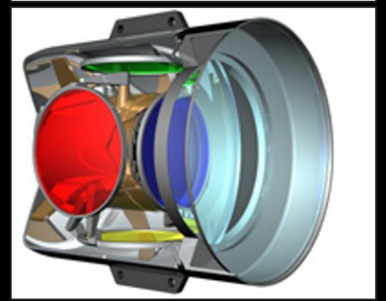
A revolutionary 3.2 gigapixel ca
telescope will produce unprece
with the widest, densest, and n

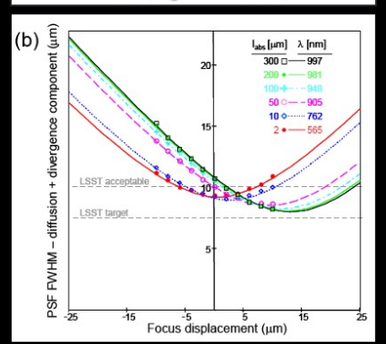
25

LSST Project

- Ground-based telescope
  - 8.4m diameter f/1, 8.6° field of view
  - NSF D&D, private funds in hand
- DOE institutions propose to deliver the Camera
  - BNL, Harvard, Illinois, LLNL, SLAC, UCSC, others
- BNL would deliver the Focal Plane Array Sensors
  - 3 Gigapixel CCD or CMOS array
  - R&D with vendors under way
- First light 2012-2013







S. Aronson
10/24/05

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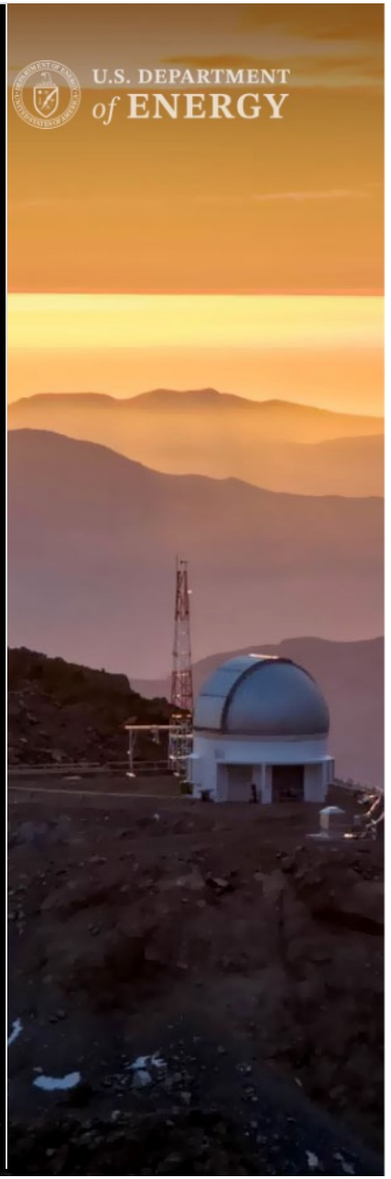
U.S. DEPARTMENT of ENERGY



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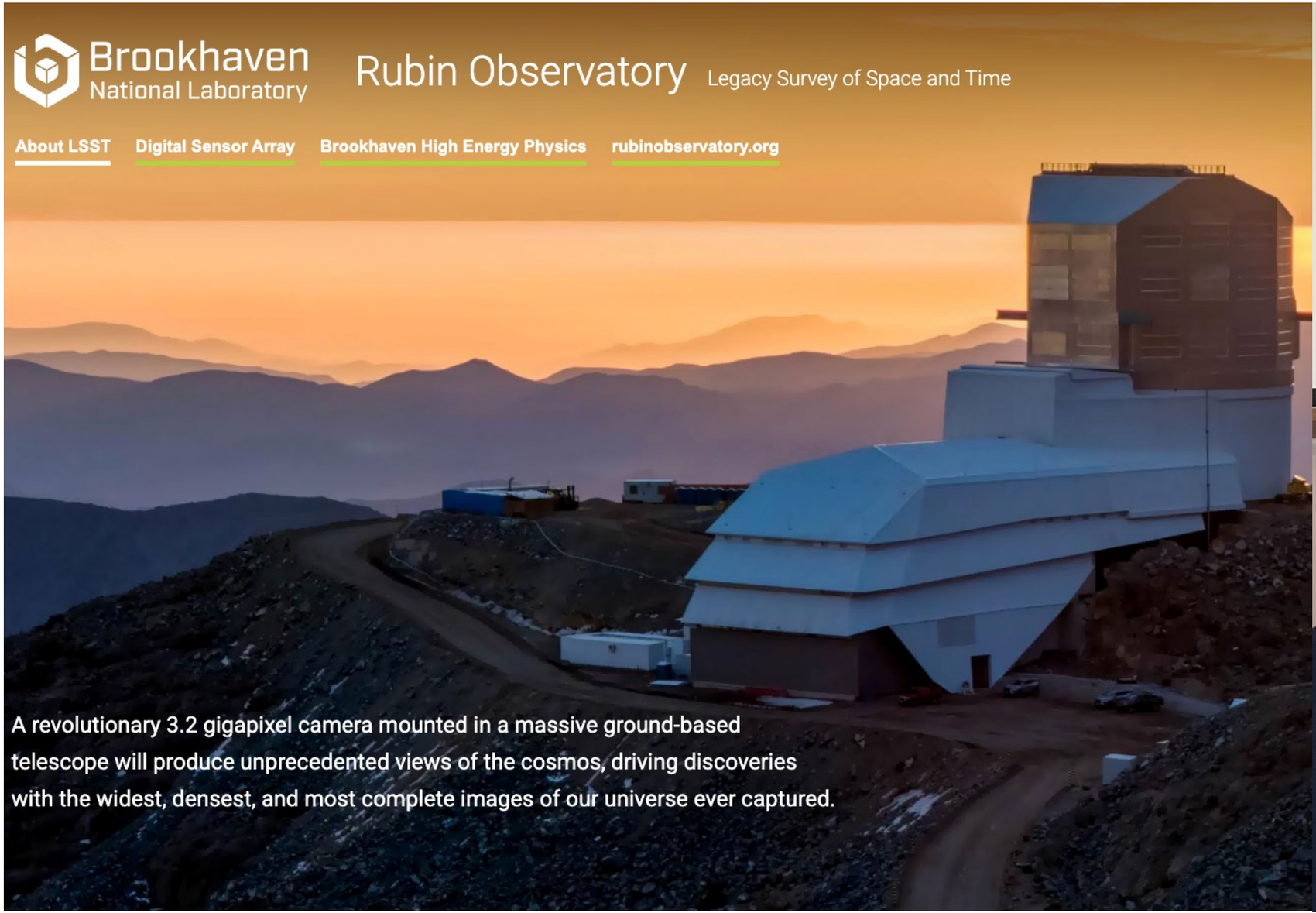

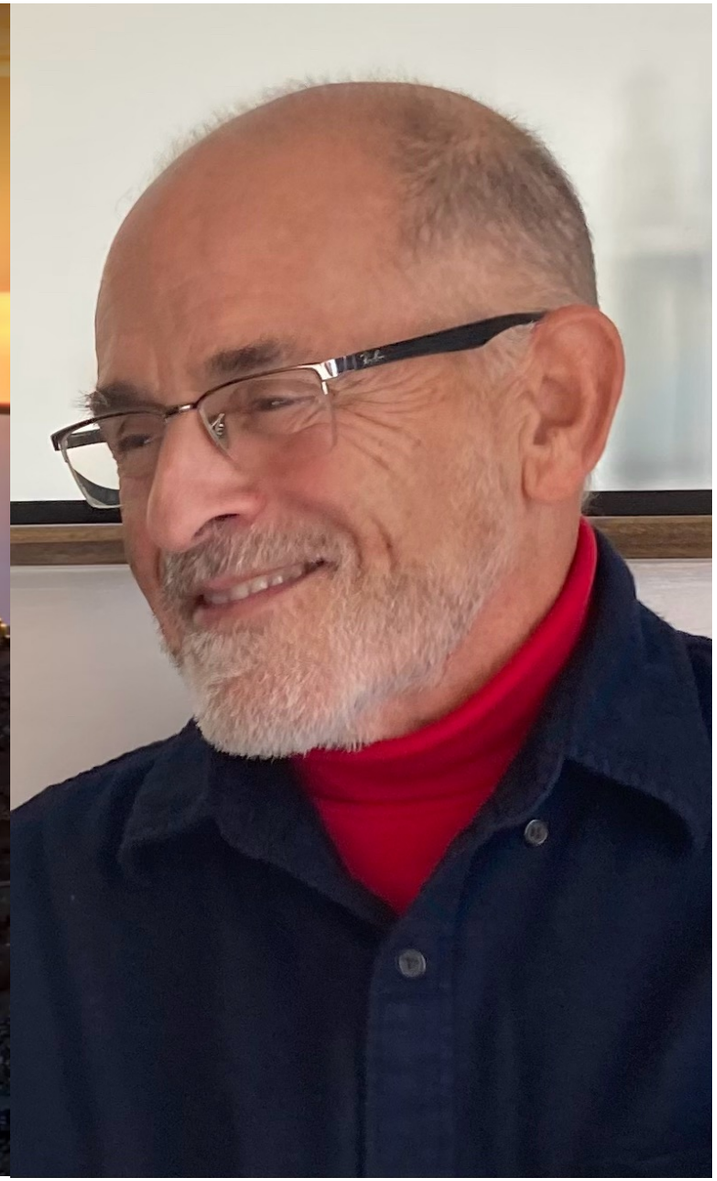

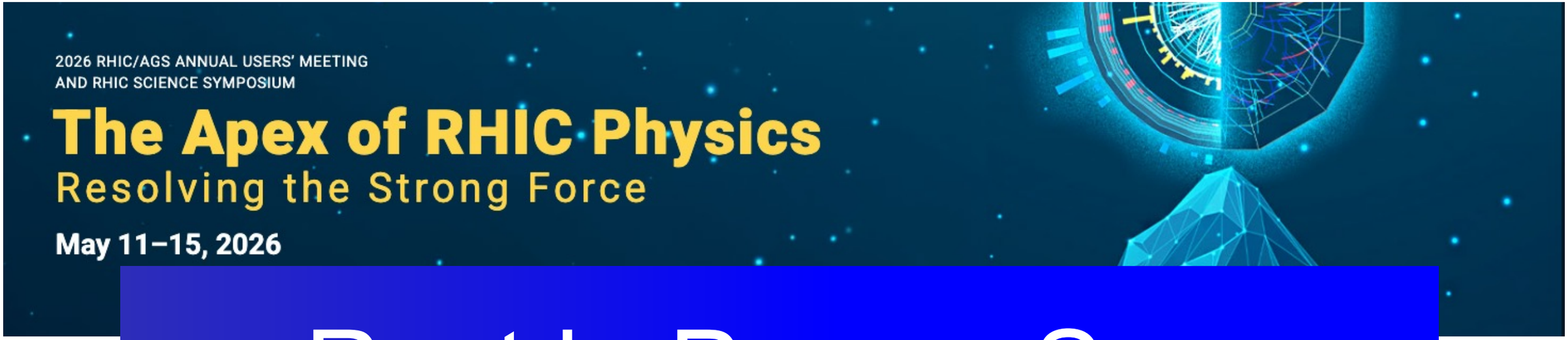

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