

# DPF Election 2004 Candidate Information

## Candidates for Vice Chair

### Nigel Lockyer

#### University of Pennsylvania

The largest body of my research has been focused on high energy particle experiments with a keen interest in testing symmetries and the study of the heaviest quarks, bottom and top. I received my Ph.D. from The Ohio State University where my thesis was the study of parity violation in proton nucleus scattering at 6 GeV/c at Argonne National Laboratory. This was followed by work at SLAC as a member of the MarkII collaboration where I studied e+e- collisions at PEP. I joined the faculty of the University of Pennsylvania in 1984 and have been active with the CDF experiment at Fermilab since then. I have been a collaborator on a number of physics measurements in the bottom quark system and more recently the top quark system, which is where my interests presently lie.

For more detail, please see my CV attached to my home page at <http://dept.physics.upenn.edu/facultyinfo/lockyer.html>

**Statement:** Particle physics is at a crossroads in the U.S. and the future is being debated by all of us. With the input of its members, especially emerging young leaders, DPF can play an important role in shaping the future of our field. The DPF plays a unique role in our field because it is not attached to a funding agency. It is critical that we maintain an independent and active leadership body that is in touch with the issues facing our field. The DPF must promote collaboration among traditional HEP laboratories, universities, and international colleagues, as well as exploiting synergies with all U.S. laboratories. Interaction with government is extremely important because funding of our field is being scrutinized as never before.

The questions being asked by our field are interesting and timeless. They can capture the imagination of the public, including school children in K-12, if we make the effort to explain what it is we do. Bringing the questions of particle physics into our educational message should be a major thrust of the DPF and our field. Particle physicists are excited about pursuing these questions; the DPF and its leadership must continue to work to make that possible. I will enthusiastically address the challenges of the DPF and our field.

### Natalie Roe

#### Lawrence Berkeley National Laboratory

Natalie Roe received her undergraduate degree in physics from Harvard University in 1981. She spent a year at CERN working on the UA1 experiment before moving to Stanford, where she received her PhD in 1989. She then went to Lawrence Berkeley National Lab as a postdoc, where she worked on the D0 calorimeter and analyzed W boson decays. An interest in CP violation blossomed into a new research direction with the approval of the PEP-II project in 1993.

Roe was the co-leader of the silicon vertex detector group in BaBar, overseeing its design, construction and successful commissioning. She worked on the first measurement of CP violation in B mesons, contributing to B mixing and tagging studies. More recently, Roe has become interested in astrophysics and cosmology, and is working on detector R&D for the proposed SNAP satellite mission. She is presently a Senior Scientist in the Physics Division at LBNL.

Roe is a Fellow of the American Physical Society. She has contributed substantial time to community service, serving on numerous advisory and review committees, including the High Energy Physics Advisory Panel, the FNAL Physics Advisory Committee, and the DESY Scientific Council.

**Statement:** The success of the DPF rests on its ability to attract energetic leadership. In recent years, the DPF has spearheaded a number of new initiatives in government liaison, education and outreach, and organized a hugely successful meeting at Snowmass in 2001. All of these efforts are to be applauded, and set a high standard for the elected leaders of the DPF in coming years.

There is still much more to be done. The exciting growth in our intellectual reach as the described in the recent report, The Quantum Universe, has been accompanied by a slow decline in funding that has cut our field to the bone, putting many of these incredible scientific opportunities beyond our fiscal grasp. At the same time, the lines separating the DPF from other APS units such as the Division of Astrophysics, the Division of Nuclear Physics and the Division of Physics of Beams are becoming increasingly fuzzy; for example, the 2004 APS Neutrino Study involves all four of these Divisions. Cosmology and astrophysics is another research area with a strong interdisciplinary aspect and significant overlap among Divisions. Traditional accelerator-based particle physics has strong intellectual connections with all of these areas, and highly anticipated discoveries at the energy frontier may soon make these connections even more real.

I believe we must continue to work closely with our sister Divisions in an effort to increase funding for all of the physical sciences, and be well prepared to capitalize on the momentum a major breakthrough will generate. Other important issues where the DPF can make a difference include ongoing efforts to increase the representation of women and minorities, to support young physicists in their careers, and to improve the frustrating visa situation affecting so many of our students and postdocs.

# Candidates for the DPF Executive Committee

## Sarah Eno

### University of Maryland

Sarah obtained her PhD from the University of Rochester in 1990 doing a search for a new quark. She also designed and built the front end electronics for the AMY x-ray detector. She did her postdoctoral work at the University of Chicago, working on the CDF experiment. She was head of the CDF electroweak studies from 1992-1993. She is currently an Associate Professor at the University of Maryland, and a member of the D0 and CMS experiments.

On D0, she worked on the muon upgrade, and received an "Outstanding Junior Investigator" award from the DOE in 1995 based on this work. She was head of the D0 new particle search group from 1996-1998. She also continued her work on electroweak studies and was one of the cofounders of the Tevatron Electroweak Working Group. She has been head of the D0 Monte Carlo group since 2003. Sarah was a member of the FNAL "Users Executive Committee" from 1998-2000. She was head of the CMS "Jets and Missing Transverse Energy" group, which is one of the five CMS "Physics, Reconstruction, and Selection" groups, from 1999-2002. In 1999, she was the only head from the US. She is currently a co-head of the FNAL "LHC Physics Center". Sarah was also a quarknet mentor in 2002-2003 and organized the workshop for the quarknet teachers in 2003.

Statement: It is currently a very exciting and busy time for our field in the US. FNAL, SLAC, and CESR and neutrino experiments are running, attracting researchers from all over the world. US HEP physicists are also busy preparing for future experiments, such as building detectors for the LHC, planning new types of accelerators that may someday lead to a new machine, planning upgrades to the SLAC accelerator, new experiments at Brookhaven, and building new particle astrophysics that will help us learn about dark matter and dark energy. Theorists are making great progress on understanding the data we have and exploring possible models for new physics. There is a lot of interesting physics to keep us occupied, and it is sometimes hard to find time to work on the problems our field faces.

However, it is the duty of the DPF executive to think about and bring attention to the problems that our field faces, to ensure and safeguard the future health of our field. Because it is an elected body, it can be an effective voice on our concerns outside our community.

I am especially worried about the problems regarding collaboration with our international colleagues. The current difficulties with visa restrictions can have disastrous consequences for our field. We need to help Congress and other elected officials understand the consequences of these restrictions. We also need to help them understand how our work benefits society, why the current flat funding for the University groups will harm the US, and the importance of a next generation machine. We must find a way to more effectively make use of the people in our field, so each of us can help in this area more easily.

Also, we have to find a way to keep US physics healthy even when a sizable fraction of our experimental community is working abroad on an LHC experiment, and to make sure that the physics capability of the currently running experiments are not compromised as researchers move resources to the LHC program.

## James Wells

### University of Michigan

James Wells obtained his Ph.D. in Theoretical Particle Physics in 1995 at the University of Michigan. He held postdoctoral positions at SLAC and CERN before joining the faculty at UC Davis, where he was awarded a Sloan Research Fellowship and Outstanding Junior Investigator (OJI) Award from the Department of Energy. He is currently Associate Professor of Physics at the University of Michigan, and is a member of the Michigan Center for Theoretical Physics (MCTP).

His research specialty is physics beyond the Standard Model, with special emphasis on supersymmetric gauge theories and theories with compact spatial dimensions. James has been a contributor and organizer of numerous workshops that investigate the capabilities of present and future experimental facilities to make fundamental discoveries.

Statement: Article II of the DPF bylaws states the objective of the DPF: "The objective of the Division shall be the advancement and diffusion of knowledge of the fundamental particles and fields, their structure, their interactions and interrelationships, the design and development of high energy accelerators, and the design and development of instrumentation techniques for high energy physics."

In my career I have been an active supporter of every aspect of this stated objective. That is why I am enthusiastic about the DPF mission and would be happy to serve on the executive committee.

In addition to the normal important activities of a DPF executive committee member, there is one particular area for which I would like to encourage increased DPF activity, consistent with the objective stated above. If elected I would assume this as my mandate for service:

I would like to help transform the DPF into a more substantive partner in the future planning of our field. At all times the DPF should have active and vibrant science panels looking at the most important issues of the day, ready to deliver reports and viewpoints to all interested parties, including national labs, universities, and government agencies. We must offer a vigorous scientific advising role to all entities that have oversight of particle physics.

A steady and open flow of scientific ideas delivered through the DPF can have an enormously positive impact on our future at all levels, from the graduate student wondering what the future might hold to funding agencies wondering what the present should bring forth. The DPF is the most important professional society representing particle physics in the United States. I would like to see it become an independent and powerful contributor to the scientific discussion.

# Candidates for the DPF Executive Committee

## Claudio Campagnari

### University of California, Santa Barbara

Claudio Campagnari received a BS in Physics from the University of Sussex in 1982 and a PhD from Yale in 1988 on a rare kaon decay search at Brookhaven.

From 1988 to 1995 he was a member of the CDF collaboration, first as a postdoc at the University of Chicago and then as a Wilson Fellow at Fermilab. While at CDF, Campagnari worked on the trigger system, as well as electroweak and top physics. He was the convenor of the top group at CDF in 1992-3.

In 1995 Campagnari moved to the University of California at Santa Barbara, where he is now a Professor of Physics. He joined the BaBar collaboration, where he has been contributing to the measurement of  $\sin 2\beta$  and to studies of decay modes related to gamma. He has also been heavily involved in the construction and operation of BaBar's Silicon Vertex Tracker (SVT), serving as SVT system manager from 2000 to 2003.

Campagnari is also a member of the CMS collaboration. He is the recipient of a DOE-OJI award and a Sloan Fellowship.

**Statement:** A few weeks ago I was informed that I had been nominated to run for a position as member of the DPF executive committee. My first instinct was to decline — why spend time on a committee when I could be doing physics instead? In the end I accepted because the colleagues that nominated me thought that I could give a positive contribution. I hope they are right...

Now I have been asked to write a short statement. What profound observations can I share with you in a couple of paragraphs? Nothing really original. We all know what is going on. We have a vibrant program and with the coming on-line of the LHC we are about to enter a tremendously exciting period for particle physics. And yet we all know that there are plenty of problems, particularly in the US: the funding keeps going down, the next “big” machine is nowhere, or almost nowhere, in sight, etc.

I do not have a solution, and nobody else does, because short of a miraculous breakthrough in accelerator physics there are no easy solutions. There are, however, things that the DPF can do, in working with the agencies, in reaching out to the public, and in helping to set directions for our future. If elected to this post I would do my best to help with these issues. I would also like to make an effort, when possible, to consult with and seek input from the younger people in the field.

## Andrew Cohen

### Boston University

Andrew Cohen is Professor of Physics at Boston University. He received bachelor degrees from Stanford University (BA, music; BS physics) and a PhD in physics from Harvard University. He was elected to the Harvard Society of Fellows in 1987, and became a faculty member at Boston University in 1990. He has served on the NRC Physics Survey Overview Committee (the decadal survey of physics) and is a trustee of the Aspen Center for Physics.

His research interests include many areas of particle physics and cosmology, including beyond the standard model physics, electroweak symmetry breaking, baryogenesis, and quantum field theory.

**Statement:** Particle physics is entering an especially exciting time. Recent discoveries in neutrino physics and beautiful results from B factories are challenging our understanding of flavor physics, while the Tevatron run II is beginning to explore physics approaching the TeV scale. The LHC, which will probe physics at the high energy frontier, is making progress towards its first physics run later this decade.

But our field is in a precarious situation. The decline in funding for US HEP represents a challenge for all of us. We must deal with the increasing complexity and expense of mounting experiments, maintain our existing program without sacrificing our future, and remain firmly focused on our physics goals. Without significant support from the federal government and international cooperation we have little chance of achieving these goals. We must share the excitement of HEP with a broad spectrum of physicists, other scientists, politicians and the general public and convince them to continue to support our base program as well as further exploration, especially new efforts like a linear collider.

Outreach remains one of our most important tools in furthering our goals. We must work harder to engage others in our program, and ensure that we create opportunities to promote our current results and future promise to political leaders and the public.