

NSF Division of Physics Response to the 2019 Committee of Visitors

The Physics Division wishes to begin by thanking the members of the Committee of Visitors (CoV) for the time and effort that they put into the evaluation of the Division's performance over the past four years. The intense scrutiny that the Committee exerted on behalf of the community can only benefit the Division and enable it to better address the needs of the community it serves. We appreciate the suggestions and recommendations that the CoV made, and we plan to incorporate these into future practice to the fullest extent possible.

The Physics Division is extremely proud of its fine staff of Program Directors and appreciates the recognition by the CoV for all their efforts, from the commendable review processes used to the high quality of the scientific portfolio. The community should rest assured that the Division, as suggested by the CoV, will do everything that is within its power to continue to recruit and hire at the high level noted in the report. We agree that science is best served when Program Directors have the opportunity and flexibility to manage their programs in a way that best serves the individual scientific communities, and we will continue to make a full effort so that these options continue to be available. At the same time, we hope that members of the community will be open to spending time at the NSF as temporary Program Directors. These individuals help maintain the strong connection with the community and make invaluable contributions to all aspects of what the Division does, both within the Division itself and at NSF overall.

The Committee had two general recommendations that concerned the Division operations as a whole. The first concerned the varying structures of the implementation of the Big Idea priority areas. It is true that the two Big Ideas with which the Division are most closely connected were implemented differently. However, we feel that it is important to stress that the Big Ideas are by their very nature intended to cross all disciplines in NSF, not just one Division or even one Directorate. The implementation strategies are chosen by working groups of Program Directors and/or division management representing all participating Directorates and are designed as mechanisms that the working group feels best address the goals of that Big Idea from the NSF perspective. For example, the Quantum Leap working group identified a need to foster cross-disciplinary collaboration focused on advancing innovation in quantum science and engineering beyond the traditional research domains. We know that implementing this approach required an initially higher workload by NSF staff and the community. However, we believe that as the program evolves the incremental workload will subside and the additional initial effort will pay off in better outcomes. The Physics Division is very fortunate in having its Program Directors be very active members, as well as leaders, of working groups that address all the Big Ideas that impact the Division, and the Division has benefitted from their input to and participation in the entire process. Program Directors will continue to exercise this role as the Big Idea concept moves forward and have come to consider these activities as a central part of their program responsibility in seeing that the goals of the Physics Division are represented in whatever process is developed.

With regard to the second recommendation concerning the NSF web page and communication with PI's and co-PI's, while we recognize the concerns, implementation of a response is out of the hands of the Division. These are duties that are handled by the Division of Information Systems. We will certainly pass on the comments to that Division and will engage, if asked, to participate in any re-design studies that that Division might decide to undertake.

We are pleased that the Committee chose to devote a special section to diversity. This is a subject that the Division takes very seriously. We are also pleased that the Committee values the diversity plan that the Division has developed. Even though only in place for two years, it has enabled the Division to focus on particular actions that have had some impact. Over the course of the next year the Division will revisit the plan and see how it might be enhanced to suggest additional activities where the potential for a recognizable impact might be discerned. We recognize the difficulty that we face in the collection of demographic data but will continue to explore whatever options that become available to secure this data.

The Committee had additional comments regarding the duration of grants. In particular, the Committee suggested that the Division continue the practice of allowing each Program Director to determine the duration of awards that best meets the nature of the scientific pursuit within that sub-disciplinary area. This has been an effective practice up to this point, and the Division will follow the suggestion and continue this practice.

The CoV also commented on the CAREER program. Since its inception in 1995, the goal of the CAREER program has been to support promising junior scientists at the outset of their academic careers to develop both as scientists and as educators and communicators. Over the course of time each community has developed its own interpretation of the role of the CAREER award in a faculty member's career. For the community served by the Physics Division at NSF this has taken the form of an expectation that a CAREER proposal will chart a new scientific direction while at the same time develop an education or outreach component that will exceed the normal expectations of a faculty member. As the CAREER award extends beyond the establishment of a strong scientific research program, it is for this reason typically awarded extra recognition. The Physics Division places a high value on the CAREER award. Each sub-disciplinary program proudly boasts of several within the program and makes a special effort to fund CAREER awards when justified.

Junior faculty are essential to the life of the community, and special attention is always given to ensure that the funding portfolio includes beginning faculty, with new awards coming each year. The Physics Division welcomes first applications through either the CAREER program or through the regular yearly solicitation and leaves it up to the applicant to determine which mechanism is best suited to his or her goals and plans. Some choose to begin with a regular award and postpone a CAREER application until later. Others choose to apply immediately through the CAREER mechanism, while others choose never to apply for a CAREER award. Over the years the Division has observed that junior faculty can develop into strong, even outstanding, scientists, educators, and communicators no matter which initial mechanism they choose.

The Physics Division appreciates that there may be confusion in the community as to how the CAREER program is viewed within the Division. In the future we will take steps to communicate this vision more broadly when Program Directors attend such events as APS divisional meetings and annual meetings with chairs of Physics Departments.

The CoV suggested that the Division examine the level of support for postdoctoral researchers, noting that support for postdocs appears to be uneven across programs. The Division recognizes that postdocs are essential to the research enterprise and are valued members of the highly-skilled workforce. In keeping with the comments made by the CoV that the physics is best served by giving Program Directors the flexibility to manage their program in a way that best serves that component of the physics

community for which they have responsibility, the Physics Division will ask each Program Director to examine trends in the balance of support for faculty, students, postdocs, and technical staff across its programs and determine what they consider to be the appropriate balance.

The Committee suggested that the Division explore the possibility of limiting graduate student tuition and fees charged to research grants to enhance the research “buying power” of physics awards. The Division appreciates the CoV’s suggestion of this as a way to stretch research funding but notes that altering the way that graduate students are supported could have unintended negative consequences and should not be undertaken without careful consideration of all possible implications. The Division will examine this suggestion but will not take any action without a full exploration within the context of NSF policies and practices related to graduate student support.

The CoV noted that compliance with the Division solicitation guideline to describe the interplay between NSF support and other sources of support is sporadic. The Division will emphasize the guidelines during outreach events, program director interactions with their communities, and society meetings. In addition, if applicable, the Division will ask panelists to pay particular attention to this aspect of the solicitation in making a recommendation on a proposal.

The Committee had a number of suggestions interspersed within the various subprogram reports. In following up on these, the Division encourages the Program Director to determine the response appropriate to that part of the community served by the program.