

PTR Research Criteria: Department of Physics

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Research Criteria

In Physics research we distinguish between large collaborations and single-investigator or small collaboration research. These have very different publication rates and organizational structures. We also distinguish between theoretical and experimental research; some areas of theory are closer to pure mathematics, which impacts funding levels. In evaluating research activity we must take into consideration whether the faculty member is engaged in theory or experiment, and whether they are a member of a large collaboration.

In terms of publications, all members of a large physics collaboration are typically authors of all papers produced by the collaboration. The number of publications can reach 100/year during some stages of a project. It is therefore inappropriate to evaluate faculty working on these experiments by any publication count. For such faculty, instead of counting publications, we evaluate them on other, documented contributions to their collaborations. Membership of a large collaboration (and the right to authorship) is a privilege granted by the leadership of the collaboration and is constantly reviewed. Any individual not contributing will not receive federal funding and will not be allowed to continue membership and share authorship of the collaboration publications.

A faculty member who **exceeds expectations** is generally expected to have produced evidence of the following over the prior 5 years:

For faculty who are not members of large collaborations, at least 15 peer reviewed research articles or scholarly works of similar nature, in high quality journals.

For members of large collaborations, evidence of leadership and major impact on the physics output of collaboration, such as appointment to significant responsibility within the organizational structure.

Grant awards or external financial support of at least \$500K (theoretical) or \$750K (experimental).

Substantial nonmonetary awards such as computing or instrument/observation time where relevant to the area of study.

Evidence of a high level of professional impact as evidenced by invited talks and presentations by the faculty member or their direct supervisees at major conferences and workshops, peer national and international institutions, etc. Evidence of high stature within the field as evidenced by election or appointment to professional boards, review panels, advisory committees, and similar bodies.

Leadership and service on national or international committees such as research foundations, federal funding panels, and conference organizing committees.

Receipt of awards or recognition for research excellence.

A faculty member who **meets expectations** is generally expected to have produced evidence of the following over the prior 5 years:

For faculty who are not members of large collaborations, at least 5 peer reviewed research articles or scholarly works of similar nature, in high quality journals.

For members of large collaborations, evidence of substantial tangible contributions to the physics output of the collaboration.

Grant awards or external financial support of at least \$150K (theoretical) or \$200K (experimental)

Nonmonetary awards such as computing or instrument/observation time, or active pursuit of such awards, where relevant to the area of study.

Evidence of professional impact as evidenced by invited or contributed talks and presentations by the faculty member or their direct supervisees at conferences and workshops, peer national and international institutions, etc. Participation on professional boards, review panels, advisory committees, and similar bodies.

Evidence of recognition of research impact.

A faculty member who **does not meet expectations** exhibits the following performance characteristics over the prior 5 years:

For faculty who are not members of large collaborations, 2-4 peer reviewed research articles or scholarly works of similar nature, in quality journals.

External funding less than \$150-200K with minimal grant-seeking activity.

For members of large collaborations, scant evidence of specific contributions to the physics output of the collaboration.

Lack of evidence of professional impact as evidenced by irregular participation in conferences and workshops, absence of external talks, etc. Lack of professional activity on boards, panels, advisory committees, or similar bodies.

Low research impact.

A faculty member who is **unsatisfactory** exhibits the following performance characteristics over the prior 5 years:

For faculty who are not members of large collaborations, fewer than two peer reviewed research articles or scholarly works of similar nature.

Failure to apply for external grant funds.

Substantial and chronic deficiencies or failure to meet expectations in research and scholarship, with minimal to no efforts to follow previous advice or other efforts to make corrections.

Absence of professional impact, as measured for example by failure to participate in meetings, conferences, or other venues within one's field; absence of invited talks or seminar presentations.