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Editorial: The Scope of *Physical Review A* and Editorial Procedures

Physical Review A has for many years been regarded as the premiere journal for the publication of original research papers in the broad area of atomic, molecular, and optical (AMO) physics. On the one hand, this is an old and established field, but on the other it is constantly being revitalized by advances in, for example, the power and versatility of lasers, and their many varied applications. From this it is clear that the ‘optics’ part of AMO Physics is of key importance. It is for this reason that we recently expanded the scope of *Physical Review A* to include papers on both classical and quantum optics. The move was done in consultation with the editors of *Physical Review E*, as explained in a recent announcement published in the January 2007 issue of both journals [Phys. Rev. A **75**, 010001 (2007)].

The field of AMO Physics is also being revitalized by advances in theory and computational methods so that theory and experiment progress hand-in-hand. This parallel development of theory and experiment is the hallmark of science at its best, and from it new applications are constantly emerging. Other rapidly growing areas include quantum information, coherent control, ultracold atoms (including BEC), and the interaction of atoms with external fields (especially high intensity lasers and ultrashort pulses). All of this indicates that AMO Physics is by no means a field unto itself. Rather there are strong interactions with other disciplines such as computer science, applied mathematics, and condensed matter physics. There are great opportunities for advances in these interdisciplinary areas of research, but it is not always easy to identify the most appropriate readership for the work being reported.

It is within this background that we must periodically analyze and reassess the scope of *Physical Review A* and the papers that we publish. As a point of reference, *Physical Review A* is the APS journal most closely associated with the research topics covered by the Division of Atomic, Molecular, and Optical Physics (DAMOP) of the American Physical Society, but for the reasons explained above, it also has close links with the Division of Laser Science (DLS) and the Division of Chemical Physics (DCP). The journal is also appropriate for many of the subject areas represented by the Topical Groups on Quantum Information, Few Body Systems, and Precision Measurement and Fundamental Constants. The subject areas of course include those covered by other parallel organizations around the world.

These considerations do a great deal to help define the scope of *Physical Review A*, but by themselves they are not enough. The journal also has a mandate to consider papers for publication that deal with broader issues of alternative formulations of quantum mechanics, and other such areas of fundamental physics. In considering such papers, the guiding principle is always that the material they contain must represent a substantial advance in physics. An alternative formulation by itself is not sufficient to justify publication, unless it allows one to solve previously unsolved problems, or provide important new insights that could not otherwise be obtained. Papers of a purely philosophical nature would generally not be considered acceptable for publication. The same is true of papers of a highly mathematical nature. Theoretical papers are of course always welcome, but there must be a clear connection to physical applications. Papers whose main focus is to provide alternative mathematical techniques to solve known problems will generally not be considered acceptable for publication. However, papers of exceptional quality in any of these categories will be given special consideration.

There have recently been important changes in the reviewing process, and the implementation of the above principles. Following the recommendations of the PRL Evaluation Committee (available at <http://publish.aps.org/reports/PRLReportRev.pdf>), all of the *Physical Review* journals have instituted a policy of rejecting a larger percentage of papers without external review. There are two important reasons for this. First, it reduces the load on our overworked referees, and allows them to write more carefully considered reports on the remaining papers that they read. Second, it provides authors with a quick decision so that they can resubmit to another journal without a lengthy wait for referee reports. In order to ensure fairness, authors who do not agree with the editorial decision to reject can file an appeal. In that case, the paper will be sent to a member of the Editorial Board to adjudicate on whether or not the paper should be sent out to external referees. If the recommendation is positive, then the paper will be refereed in the normal way. The ultimate aim is to improve the efficiency of the publication process for both authors and journals, and to improve our service to the physics community.

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Editor

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