Peer-review’s future in a world of open archives

The APS Point of View

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The APS

• Scholarly society of 40,000 physicists
• Mission is to “advance and diffuse knowledge of physics”
• Mission is not to publish journals or to make money doing it
APS Journals

- Physical Review Letters
- Physical Review A, B, C, D, and E
- Physical Review Special Topics - Accel. Beams
- Reviews of Modern Physics
- PROLA (all APS content back to 1893)
- ~25,000 manuscripts reviewed, ~14,000 published per year
Economics of APS Journals

• Budgeted to break even
• Journal income not used for other society activities (reserve fund used instead)
• ~$25 million/year
• $1000/manuscript, $1800/published article
• Reject articles actually cost more money than accepted articles (more cycles, appeals)
APS Journals Provide Services

• Peer-review
• Copy-editing and typesetting
• Distribution
• Persistent names
• Linking
• Archive
More on Services

- Phys. Rev. Lett. 86, 1 (2001) is a persistent name that results from peer-review
- Linking and archiving are new services that weren’t required in paper world
- Distribution is now electronic
- Which services should the APS be responsible for?
arXiv.org

- Low cost of distribution
- Archive
- Increasing percentage of literature (90% of PRD appears on arXiv.org)
- Persistent naming
APS and arXiv

- APS and arXiv have a cooperative agreement
- APS (with BNL) hosts mirror
- APS copyright statement explicitly allows authors to use and update e-prints
- APS allows submissions directly via arXiv
- Phys. Rev. allows referees to get paper from arXiv
Overlays

- Freely accessible literature
- Low cost distribution
- Integrated metadata via OAI
Could Phys. Rev. be an overlay?

- Some might say Phys. Rev. D already is
- How does one recover costs for peer-view?
- Dependent on (unstable) subscription model
- More than just peer-review related costs need to be covered
What’s missing from arXiv.org?

• True archival formats with potential for distribution via new media (XML enabled web browser, e-book, etc.)
• Robust handling of non-TeX submissions
• Rich metadata (tagged references for linking and searching)
• Quality-control
• Multimedia support (format conversions)
Orders of magnitude

e-Print Distribution $1 - $10 per paper

Small e-journal (JHEP) ~$500 per paper

APS journal $1000 - $2000 per paper

Commercial journal $5000 - $15000 per paper
Paying for the added services

- APS believes missing services are essential to long-term future of the literature
- Subscription model (Reader pays…)
  - All costs wrapped up into one sum
  - Distributed costs
  - Serials crisis spiral
- Writer pays
  - Where does the money come from?
  - 2/3 from overseas
  - High energy physicists got this wrong
Cutting costs

- How much can APS costs be reduced?
- Includes editorial costs, production costs, and distribution costs.
- Distribution costs could be greatly reduced.
- Electronic composition/typesetting costs could be greatly reduced.
- Editorial costs are very inelastic at the scale and quality level of Phys. Rev.
The crux of the problem

• APS probably can’t get its costs below $500- $700 per article
• arXiv.org can’t add functionality without increasing it’s costs by large amounts ($100,000 per person)
• Where is the money going to come from?
arXiv and OAI aren’t enough

- Automated metadata extraction
  - Authoring tools
- Automated archival format
- Automated typesetting of archival format
- Institutional permanence of archives
APS and OAi

- Starting to experiment with mode 0
- Make metadata available to various services (SLAC/SPIRES, ADS, ISI, etc.)
- Metadata export will be a service with a fee structure.