Peer Review - the HEP View

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Is this what a referee does?
Peer Review - the HEP View

• This will really be a view from CERN

• I can’t speak for all HEP, but have consulted colleagues in the three main areas of research which produce publications which are sent to peer-review journals.
  – Experimental Physics
  – Theoretical Physics
  – Accelerator Physics

• HEP is a preprint dominated field
Experimental HEP

• The case of Experimental HEP is an interesting one:
  – HEP experiments are now done by large collaborations (e.g. ATLAS and CMS with almost 2000 physicists from 60 countries);
  – Inside such collaborations there is an internal review before any paper gets sent for publication (done by a small group of between 5-10).
    • Paper, in its almost final form, is then sent to the whole collaboration for review
    • For CERN experiments, a referee – external to the collaboration – validates the paper from a scientific and editorial point of view
    • This review process involves so many people that there is little ‘added value’ given by publishers’ peer review;

• The experimental HEP community took a long time to participate in the LANL e-print archives
  – Probably because it did not match their way of working
A (small) part of the ATLAS Collaboration
Theoretical HEP

• HEP theoretical physicists work in much smaller groups than experimentalists.

• There is an active exchange of research ideas before publication, between colleagues or friends working in the same area.
  – The XXX LANL e-print archive grew out of this way of working.

• Theorists don’t use journals as a research tool
  – They don’t mind getting published there, but that is all.

• I have heard the view expressed frequently and forcibly that the publishers’ peer-review process adds little to the value of theoretical physics papers.
Theoretical Physics reviewing process

Friends → Author → Revised version → arXiv → Journal

Enemies

Wait for comments
Theoretical HEP

- Are theoretical physicists so different from their experimental colleagues?
  - Experimentalists use the collaboration to review their papers and then submit them to servers (like the CERN server)
  - Theorists use the world-wide network of fellow workers as reviewers and use the LANL archives to publicise their work.
• At CERN SL, PS, LHC and EST divisions publish papers on Accelerator Physics.
  – These go through a CERN internal refereeing process to get a ‘CERN number’
  – Very few journals for accelerator physics
  – Most papers (10:1) are not submitted to peer-reviewed journals but are presented at conferences and appear in the proceedings.

• Accelerator physicists are not big users of the LANL e-print archives.
  – Don’t have a preprint culture
  – probably doesn’t suit their way of working.
JHEP, the Journal of High Energy Physics

• We have recently seen the arrival of JHEP, the Journal of High Energy Physics, a fully electronic journal covering all branches of HEP.

• The JHEP refereeing procedure is based on the traditional system:
  – Electronic-only processes;
  – An editorial board consisting of distinguished senior physicists;
  – An editor receives the submitted paper, examines it, asks one or more referees for an opinion and then acts accordingly;
  – The confidentiality of both the submission and the identity of the referee are guaranteed;
Scientific Notes

• The increasing size of HEP collaborations has led to a new type of publication called a “Scientific Note”.
  – This was announced in the CERN Courier Volume 39, Number 9
  – These are short notes on results of analyses, detector development, simulations, etc.
  – Only authors directly involved in the work are credited
  – Made available to the collaboration during validation process (read-only)
  – Refereed internally inside the collaboration and final approval given by “spokesperson”

• The CERN Document Server offers support for the refereeing process of these notes (Thomas mentioned this yesterday).
  – In an electronic but traditional way
CERN Open Papers

• In an attempt to get CERN papers which were never given the the library we started the “CERN-OPEN” category on the CERN server.
  – Started in 2000
  – Electronic only submission
  – Validated by a physicist – not refereeing

• We only get about 100 submissions per year!
  – The library submits papers it finds elsewhere to complete collection
  – This is about 10% of the ‘missing papers’

• So a free, non peer reviewed publishing effort hasn’t really worked.
Comments / Conclusions

• Peer review, if done well, can add value to papers
  – Not a unanimous opinion

• Experimental HEP does not see an advantage in open peer review
  – Their internal reviewing takes input from many scientists

• HEP is unsure of value added by traditional journals
  – Most of the ‘actors’ are physicists

• There is a danger of information overload
  – 4000 HEP papers are added to the CERN Document Server each month and this is increasing
  – If we don’t have good validation then we will see even more papers
    • The people who should be reading them will not bother
    • One physicist estimates than > 10 papers per week (in his discipline) is too much
Comments / Conclusions

• The jury is still out on how best to do peer review
  – Open v/s closed

• Theoretical physicists already depend on feedback rather than formal peer review
  – Would probably use an e-based peer review system. e.g. 2-level process
    • Comments on first draft open to author only
    • Once paper is ‘corrected’ comments become public domain

• Any generalized electronic peer review system (open or closed) must support the very different ways of working in the different branches of HEP