Spark Grant Application for the Open Review Platform

12/03/13 by Erik Bauch and Georg Kucsko

Open Review is an online PDF annotation platform for collaborative annotation of research publications and related material (Fig. 1). The power and usefulness of such a tool has been demonstrated successfully by a software tool called ‘Nota Bene’. It allows classes to discuss PDFs in a similar fashion, and is currently used in classrooms around the world. However, Nota Bene has not seen any major updates in recent years and lacks essential features such as text selection, formula type setting, annotation printing, attachments, reference management, and user-rated content. Moreover, it has not been designed to discuss publications openly.
On *Open Review,* Students can comment directly on text, formulas, or images, reply to comments and rate each others contributions. Additional features include groups pages, cross linking to passages in other papers via simple copy-paste, support for formulas, the ability to draw sketches and the option to upload images. More dedicated sketching tools, such as a molecular sketcher are in the works. All these features make Open Review not only an advanced PDF annotation tool, but a specifically tailored discussion platform for scientific content. For example, papers from the open access archive arxiv.org with more than 800 000 physics and math e-prints can be added with only two clicks. Copyright verification functionality allows upload of content from all journals, ensuring PDF access only by students of a particular group. All others can prove their access by simply dragging the correct PDF into the browser. Even if users have no access to the copyrighted material, they can benefit from the discussions since comments remain public. Archiving all scientific discussion is a major goal of *Open Review* in the long term, contributing to open scientific collaboration in general. From a technology perspective, *Open Review* is build using only open source technologies, such as Drupal and PHP. This will allow us to include Open Review, or parts of it, into Harvard's ecosystem in the near future. This could be, for example, Harvard's Open Scholar platform, or the recently announced Black Pearl initiative.

At this point, we would like to emphasize that Open Review is very well-suited as a general educational tool for all sciences, and this is where the the HILT Grant becomes crucial. The platform is especially well-suited for journal clubs, seminar classes, and classes that rely on reading material such as class notes or books. We tested Open Review this semester for the first time in the seminar class Physics 95, consisting of 11 undergraduate students, the TF (Erik Bauch) and me. Every week, the students read 2 publications related to research in the Harvard Physics Department and used *Open Review* to discuss them online. During the Monday sessions, two students presented topics from the papers and the whole class engaged in a Q&A session, usually with a postdoc from the field. Throughout the semester we made the following observations:

1. From the discussion on *Open Review* it was very easy to see if the students read the papers and to what extent they engaged in the discussion.

2. The quality of the comments and questions was high in general. Some comments contained links to relevant online reading material, others contained explanations of technical terms and a good fraction were related to details of the presented research.

3. It seemed that most of the students were well-prepared when coming to class and the online comments seemed to initiate the in-class discussion most of the time.

4. In general, it was the seniors who replied to their peers questions online, and later in the

semester most of questions had at least one reply.

5. The students made some 550 comments on 27 research papers throughout the semester.

6. Almost all of the students decided to use their real names instead of aliases, despite knowing that all the comments will be public. In fact, one student asked to have his alias changed to his real name during the semester noting that he wouldn't be afraid having his name associated with his comments.

From these observations, we conclude that the Open Review platform works exceptionally well as an educational tool. Specifically, the extent to which the students were able to help each other by answering each others research questions was a great surprise to us. The use of their real identities fostered an open scientific discussion of high quality but also allowed honest criticism. When asking the students about their experience with *Open Review*, the feedback was very positive and one student noted that it is “the best platform he has used so far”.

Attachment

Fig. 1 - 3

Figures

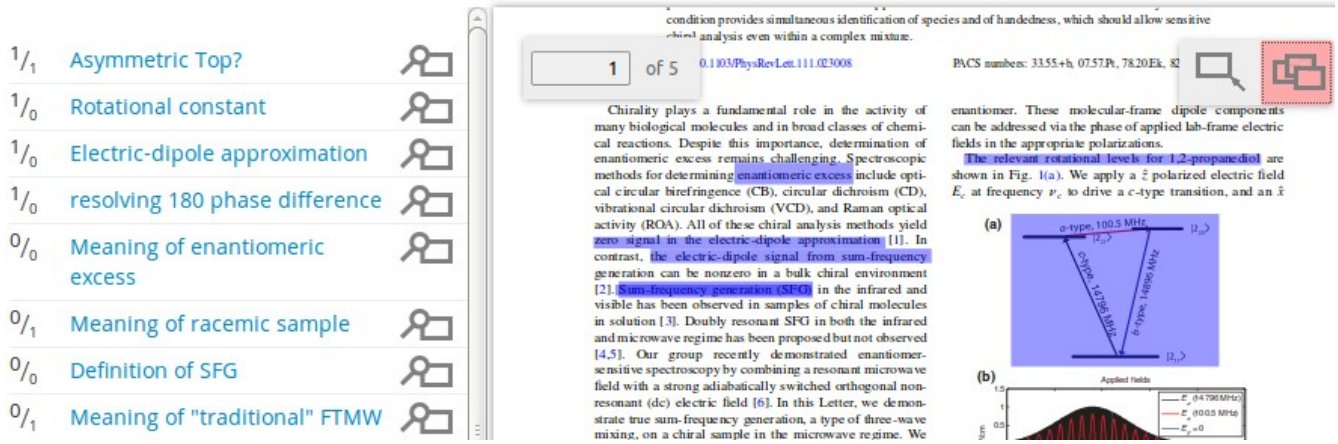

Fig. 1: The Open Review publication view. On the right side the PDF is displayed, whereas all the comments are highlighted in blue. On the left side, the user sees a list with comments, which can be expanded further information. By clicking on the symbol next to the comment title, the PDF viewer jumps to the text associated with that comment. Vice versa, clicking on the the highlighted comment opens the comment on the left.

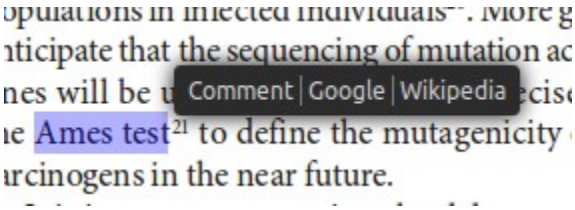

Fig. 2: Native support for text selection: Inside the PDF the user can select any text and search for it on Google or Wikipedia, or leave a comment.

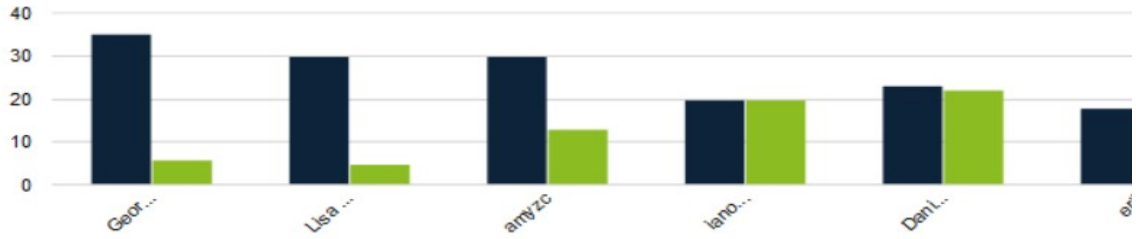

Fig. 3: A chart showing the user contributions in the class Physics 95. Blue represents the number of questions and general comments posted by the student, green the number of replies.