

How to write a technical review for a journal article or conference paper

Before you get started...

If you aren't sure what the editor or conference organizer wants to see in a review, you can usually figure it out by launching the software for uploading the review (then cancel the upload once you see what is expected from reviewers). Conference paper reviews are usually between a 1/2 page and 1 1/2 pages. Journal manuscript reviews tend to be 1-4 pages depending on the reviewer's expertise relative to the paper and the quality of the paper. Sometimes a review can extend to many more pages, especially if the paper is going to be rejected. Compelling justification should be provided for negative reviews.

Preamble of the review

The opening lines of your review should provide the paper title, the author names, and (if available) the identification number for the article that was assigned by the journal or conference. Do not identify yourself.

Begin with a "synopsis" (summary paragraph) describing what the authors did. Immediately after the summary, add one line (standing alone as its own paragraph) giving the recommendation of whether or not the manuscript should be accepted or rejected. Additional or journal-specific terminology for the recommendation might be needed, so be sure to read the review instructions carefully. For example, it is fairly common to allow conditional phrases such as "major revisions required."

Don't worry if you don't understand everything about the manuscript. You can comment on the parts of the paper that you understand, and then let the editor know which parts of the manuscript that you didn't feel qualified to assess. The abstract, introduction, and conclusions are supposed to be accessible to a broader/less specialized audience having intermediate expertise in the general discipline. If not, let the editor know immediately.

Address the scientific merit of the manuscript

- Technical soundness
 - issues with research approach or experiment design
 - issues with assumptions
 - issues with simulations, calculations, or construction
 - issues with data analysis
- Comment on whether the motivation for the work is clear
- Comment on whether the author makes it clear what their unique contribution is
- Comment on whether the literature review (background) seems to demonstrate knowledge of the field (for a conference paper, the length of this section and the number of citations might be more limited due to space constraints)
- Things that need clarity
 - figures that need labels or better captions
 - undefined jargon that should not be presumed known to all readers
 - non-standard or undefined notation or symbols
 - Inconsistencies (such as using two definitions of strain or double-using symbols)
 - etc.
- Applicability to the conference or theme of the journal

Comment on non-technical issues like style and clarity

You are not responsible to correct all grammar, but you should comment if this is an issue and give a few specific examples. Is the information presented in a logical sequence? Are the graphs readable? Do the authors use big jargon words where simple language would be better?

EXAMPLE OF A FREE-FORM TECHNICAL REVIEW

Review of manuscript (#A345Z20090614) “A critical examination of thermodynamics of boogers during projectile motion following a sneeze event” by Alfred Knowitall

Synopsis:

This article reports the results of real-time optical measurements of the temperature of boogers immediately after they exit the nose following a sneeze event precipitated by having the test subject (a chimpanzee) inhale a pepper-based irritant. The resulting data are analyzed and compared to finite-element simulations with turbulence effects.

Recommendation: Accept with minor revisions required

Comments on the technical aspects of the manuscript

Although the introduction mentions some contemporary work in the area of booger characterization, the work in this manuscript needs to be placed better in the context of past work on transient measurements of temperature of mucus-coated projectiles, especially the seminal work of I.M. Gross in the 1970s and 1980s. Overall, motivation for this research needs to be clearer.

The data may be called into question since the use of a pepper-based irritant might have coated the boogers with mucus before their exudation, thus corrupting the accuracy of the optical measurements, not only by introducing a wet reflective surface, but also by providing some degree of thermal insulation that would not be present in ordinary circumstances.

The manuscript states that temperature can be inferred from phase shift in optical data. However, the well-known formula that is applied for this purpose is founded on an assumption of a stationary specimen. How can this formula be justified for application to moving specimens? Corrections of the type used in velocity interferometry are needed.

Equation 15 clearly contains a typo, as can be seen by the fact that it is dimensionally inconsistent. The second term probably needs to be divided by booger stiffness. Equation 12 appears to be incorrect since it fails to reduce to the known solution for rigid boogers in the limit as mucus stiffness goes to infinity.

The data analysis uses ballistics equations that apply only for motion in a vacuum, but corrections for air drag on the boogers are needed. Minimally, some justification for neglecting such effects should be given.

The finite element simulations do not appear to have converged. The reason for the initial spike in the response curves should be discussed.

Comments on non-technical aspects of the manuscript:

This manuscript is lucidly written, but it has numerous grammatical errors. For example, line 53 of page 8 has “...the simulation crashed because of negative Jacobian error.” (the word “a” is needed before “negative”).

Labels on the graphs are too small to read, and the accompanying captions fail to adequately describe what is depicted. For example, change the caption from “results of measurement #5” to something more informative. Some figures are provided without being referenced in the text, which makes their purpose unclear.

Figure 7 has appeared in the literature before, so a citation is needed for it.