Authors’ (A) Responses to Comments of Reviewer 1 (R):

R: Comments for authors:
The paper is improved and now seems acceptable for publication. There are some improvements that could be made to the clarity and logical flow of the writing. I’ve made a few additional suggestions here.

A: The authors would like to thank the reviewer for the valuable suggestions. We have addressed the concerns raised and believe that the recommendations have clearly improved the quality of the work.

R: page 1, bottom of col. 1: there are two concepts that you are trying to get across here that I think are poorly interleaved. They are (1) in comparison to known deterministic algorithms (as shown in Figure), your algorithm has improved (and optimal) message complexity, which provides better scalability. (2) This scalability comes at a cost of a small probability of failure. Your algorithm also has better message complexity (or better quantified failure probability) than existing methods that are not guaranteed to succeed. (As a quick fix, I think if you move the sentence starting “In this sense” to before the sentence starting “It is important” and add “However” before “It is important”, that probably gets you most of the way there, with perhaps some additional minor wordsmithing needed.)

A: Change made as specified. See updated Introduction.

R: page 2, figure 1: I think “guaranteed” would be clearer than “deterministic” here.

A: Change made as specified. See updated Figure 1.

R: p. 2, col. 1: last sentence: It seems simpler (and equivalent) to say “All processes are assumed to follow the specified algorithm.” (Since this implies that they know it, or at least enough about it to execute it.)

A: Change made as specified. See updated definition of Process.

R: p. 2, col. 2: you should italicize the terms being defined when they are introduced inside their definitions (i.e., “contenders” at the end of the first bullet, “mediators” in the 3rd line of the second bullet, etc.)

A: Change made as specified. See update System Model.

R: p. 2, col. 2: “two-way” should be hyphenated in “two way exchange”. And I think also “fail-stop” should be hyphenated in “fail stop process”.

p. 3, col. 1: last two sentences of first paragraph would be better as: “We initially present the synchronous version of our algorithm for easy of understanding. In Section 4, we extend our algorithm to the asynchronous setting, which is more realistic for large-scale systems.”

p. 3, col. 1, last paragraph: it will be clearer if you make the following changes: “(the process to which ... sent a message to arbitrate)” -> “(*a* process to which ...
*sends* a message to arbitrate)” (two changes, as denoted by *’s). Later: ”that will be a mediator” -> ”who thereby becomes a mediator”. Also, remove comma at the end of the line (after ”messages to”).

A: All the changes made as specified.