Response to Referee Report 3

We would like to thank the referee for their careful reading of the manuscript and their useful comments and suggestions, and for pointing out directions for further development. Below, we provide point-by-point responses to the referee's comments.

Referee Comment 1

"How is it possible to use crossing symmetry in this context? In particular, can this help to understand the analytic properties of conformal blocks?"

Response: We thank the referee for this interesting question. We do not (yet) know the answer to this question, but have added the following paragraph to the conclusion section as a tentative suggestion for future work:

The braiding, and fusions matrices that characterize holomorphic conformal blocks of rational CFTs are well known to obey nontrivial pentagon and hexagon identities [see G. W. Moore and N. Seiberg, Lectures on RCFT]. While the discussion of subsection 3.3 below touched on (analogues of) these matrices, we never had occasion to make nontrivial use of the identities these objects obey. It would be interesting to explore the interplay (if any) of these identities with the study of Lorentzian correlators, along the lines of this paper.

Referee Comment 2

"I find Appendix D very interesting. Can this analysis be extended to the case in which $Log^2 z$ or higher transcendental functions appear? (For instance, derivatives of D functions). What are the challenges to extend it?"

Response: We thank the referee for their appreciation and for making this point. We agree it would be interesting to study more complicated structures like derivatives of D functions. We do not see a clear obstruction. As our paper focuses mainly on 2d theories, our comments on higher dimensional theories were incidental; we have not performed a systematic analysis of structures more complicated than the simple D functions. We feel this could be an interesting topic for further work, and have added a line at the end of Appendix D, making this point:
We parenthetically note that the $Li_2(z)$ shares some of the properties of the function $(Log^2 z)$, as a single monodromy operation around each of these functions produces a Log z.

Once again, we thank the referee for their detailed and thoughtful feedback which has improved our paper. We hope the paper is now suitable for publication.

Sincerely,
Suman Kundu, Shiraz Minwalla, Abhishek Navhal