One of the authors Hongwei Chen hoped to add a new affiliation, which caused the length exceeding 8 lines. We think it is not suitable to add a new affiliation in the revised version, and deleted it now. This is the only cut. The main text remains the same.

Here is the latest reply to the editor about the changes.

Dr. Sonja Grondalski  
Assistant Editor   
Physical Review Letters

Dear Dr. Grondalski,

Thank you so much for quickly forwarding us two very positive reports on our manuscript LE13229. We are glad to see that both referees share our view on the importance of our work and recommend publication in PRL. In particular, referee B also encouraged us to give even stronger emphasis on the use of GRAPE technique in encoding a complicated simulation circuit into long shaped control pulses.

We have now carefully considered referee B’s suggestion and accordingly made the following changes to the main text.

1. Second paragraph of the right column of page 3: We have changed the sentence “As a result, the technical complexity of the experiment decreases but the fidelity is maintained at a high level” to

“As a result, the technical complexity of the experiment decreases dramatically, the error accumulation due to gate imperfections is avoided, and the simulation fidelity is maintained at a high level.”

1. To further emphasize the above-mentioned point, after the sentence “Our work reported here is the first experimental study of the quantum simulation of a prototype laser-driven chemical reaction” in the Conclusion paragraph, we have added the following sentence: “This is made possible by shaped quantum control pulses that do not accumulate errors due to gate imperfections”.

We are also happy to reconfirm that our manuscript is not under consideration by any other journal. We certainly look forward to hearing from you again very soon.

Sincerely,

Jiangfeng Du