Referee: 1

Comments to Author(s)

This experimental work is really an interesting and excelent application, with a high degree of physical content to discuss difficult tasks. However, in an attempt to reproduce their results, I found some difficulties that I believe the authors are able to clarify us.

I wanted to know about the text on page 7 of 16 (text in pdf) after the equation 0.4, Why the variable $ s\_ {m} $ depends on the parameter T?, Since the references PRL 101, 220405 and PRL 90, 067903 there is not that kind of dependence.

I wanted to know about the equation 0.4 and 0.11: It is a doubt on the unitary operator for each adiabatic step, it is possible to see a difference in the third argument of the exponential in equation 0.4 of the present report when it is compared with the definition of the operator U\_{m}^{ad} on page 3, line 2-3, of Ref. PRL 104, 030502. Which one is correct?

The arguments of exponentials of the equation 0.11, on page 11 of 16, have they the same theoretical source that arguments of exponential of equation 0.4?.

On page 11 of 16, lines 29 and 30, the authors state that they have achieved full state tomography which represents the molecule in the reactant state. The density operator in the case would be 8x8, could they add a picture depicting the tomographed state in the initial stage, intermediate (step 13) and final (step 25) of the simulation process, consistent with Figure 4b?. (As an example, see fig. 3 of Ref. PRL 90, 067903).