

Dear Editor,

first, we like to thank you for your positive response to our revised manuscript. We also see your note on the beam geometry:

"The last two sentences of paragraph 2.2 don't convince me. ("This relation also implies that even though higher order radial modes appear to be "larger", their beam waists are the same. This allows coupling between an atom and cavity modes with equal strength across all radial transverse modes.") I strongly advise you to look closer at the physics involved. If you can clarify this, it would make the case of your paper much stronger."

Our response:

Thanks for highlighting this. As this is not straightforward to see, we have provided a supplemental document which works out explicitly the atom-cavity coupling constant to clarify our argument. In parts, this is a routine field quantization exercise, why we felt it would be better placed in a supplemental document rather than the main text.

We also changed the phrase "their beam waist are the same" to "their intensity cross-section areas remain the same", as our original formulation may have generated some confusion on our definition of a beam waist.

We added a differential pdf version highlighting the changes of the revised manuscript compared to the previous one, and look forward to your reply.

With Best Regards on behalf of all authors,

Christian Kurtsiefer