

Dear Dr. Wesselborg:

We thank the referee for his kind words and useful comments. We have revised the manuscript and (particularly) the figures, in response to her/his comments, and have changed the figures in response to your (Phys. Rev. C) editorial concerns. Our detailed response follows

PROBLEMS WITH MANUSCRIPT:

In reviewing the figures of your paper, we note that the following changes would be needed in order for your figures to conform to the style of the Physical Review. Please check all figures for the following problems and make appropriate changes in the text of the paper itself wherever needed for consistency.

Figure(s) [1, 3, 5, 6; please check all, amend where necessary]:

Please increase the font size (axis labels, axis scale values, legend, etc.). Please ensure that all lettering is 2 mm or larger (1.5 mm for superscripts and subscripts) after scaling to the final publication size. Note that the column width is 8.6 cm (twice that amount plus gutter for extra wide figures).

We have redone the figures with more uniform font sizes, and believe that the lettering is now all big enough for Physical Review C.

Figure(s) [4; please check all, amend where necessary]:

Please modify units in order to avoid the ambiguity of more than one solidus, i.e., a/b/c [e.g., add bracketing as needed to group fractions or delete second and successive slashes if the first slash means "per"; e.g., instead of counts/sr/s, use counts/sr s or counts/(sr s)]. Please also adjust the text of the paper as appropriate.

We have changed the y axis of Fig. 4 to meet this requirement.

Report of the Referee -- CE10595/Adamczyk

The paper "Coherent diffractive photoproduction of ρ^0 mesons on gold nuclei at RHIC" presents new, high statistics results on photoproduction of light vector mesons in ultraperipheral gold-gold collisions at RHIC.

Although ρ^0 photoproduction at this energy has been studied by the STAR collaboration before, the increased statistics allows new results to be obtained. These include in particular photoproduction of the omega meson and the observation of several diffraction minima in the transverse momentum ($t = p_T^2$) spectrum.

The paper is well written, and I recommend publication in Phys. Rev. C once the minor comments below have been addressed.

Thank you.

1) Second paragraph, Section II: "This gives good pion/kaon/proton separation up to their respective masses." The authors should double-check to ensure it is clear what is meant here. Separation should be possible over a certain momentum range, and that should be specified. Presumably the range is different for pion-kaon and kaon-proton separation.

The referee is correct that the range for pion-kaon separation and kaon-proton separation is different. Here, we are only concerned with separating pions from kaons/protons. We have updated the language in the text.

2) The number of events is given as 384,000 at the bottom of the left column on p.4, while in Section V the number is given as 394,000. This should be corrected.

The correct number is 384,000. We have corrected this.

3) Tables I and VII: The rapidity range for the cross section should be given in the caption. Presumably it is $|y| < 1$, but putting it explicitly in the caption avoids any possible misunderstanding.

It is indeed $|y| < 1$; we have added clarifying language to both captions.

4) Figure 5: The red line is hardly visible. It should be put on top of the blue shaded area, not underneath it.

The line has been moved to be on top of the blue shaded area, so is well visible.

[Editorial Office remark: Please remove commas used as thousands separators. The usage of commas versus periods in numbers is subject to cultural context. Accordingly, we use decimal points only and use small spaces where dividing up blocks of thousands digits is useful.]

OK, done.

We trust that the paper is now ready for publication in Physical Review C

Spencer Klein, for the STAR Collaboration