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## Response to Referee report for manuscript ID 597030

Dear Editor,

first, we would like to thank the referee for the careful and constructive comments to our manuscript. We try to address the items pointed out in detail:

1. (comparison to work by Morisse et al (2024), EPL 147, 15001):  
The work of Morisse et al. characterizes the Siegert relation of light emerging from an atomic ensemble, where we are looking at the simple system of light scattered by a rotating grounded glass plate. We agree that techniques are similar, but work on different physical systems. We agree this is a relevant topic and included the Morris work in the revised manuscript, but we found it difficult to specifically point this work out because a lot of different pseudo-thermal and thermal light sources can (and partially have been) investigated with this technique. We also find that the results in the figures we present is significantly different that we felt made a direct comparison somewhat artificial. We hope that adding the reference addressed this issue adequately.
2. (Application of this method distinguishing thermal from pseudo-thermal light):  
We do see potential applications of thermal light where the temporal correlations are used, e.g. for lidar. "True thermal" may offer some advantage where the genuine randomness is important (like for a stealth needs) compared to pseudo-thermal light which may be deterministic (in principle the ground glass is), but we have not yet a clear enough understanding if that is really a robust advantage. Therefore, we feel we don't have enough support yet to make an application claim in this manuscript, and prefer to leave it as a scientific observation.

To address the specifics pointed out:

1. (adding more recent references using RGG):  
We are grateful for the references provided and added them in line 32.
- 2., 3. and 4. (typos): Thanks for pointing this out, we fixed this in the revised manuscript
5. (timestamping/jitter details):  
We added time bin information and the jitter information we had access to in new lines 66-69. The timestamp method jitter of 20ps rms was measured, the APD contribution is a bit tricky because it is not a nice Gaussian jitter but has a long tail; however, this would not contribute to the main message in the manuscript, so we quote the FWHM instead.
6. (error bar explanation):  
The error bars are indeed standard deviations. We added that comment in the figure 2 caption.

7. (reference to related work for the experimental setup):  
We added the references provided in the new line 92 now.
8. (error bar explanation)  
Similar to point 6., we added a statement in the caption of figure 4.

We hope to have adequately addressed the points made by the referee in the amended manuscript, and look forward for your reply. We added a difference pdf for easy reference as well.

With Best Regards on behalf of all authors,

Christian Kurtsiefer