

# PRB - Response 2

## Report of the First Referee:

The authors improved the manuscript, and it is now suitable for publication. The manuscript contains a better discussion of the motivation of this theoretical work and the status of experimental research, has a review of prior work on the related topics and explains and corrects some assumptions left unjustified in the original version of the paper.

I still find that the justification of approximation in Eq. (34) is sketchy and likely misses some essential effects related to the impact of the radiation on the distribution function in microwave fields. Moreover, the authors are misinterpreting the results of earlier theoretical works. In particular, Ref. [31] demonstrates both the effect of photo excitations of electrons and the dressing of electronic states. This paper also discusses the importance of the disorder structure and that the large parameter  $r_c$  often characterizes the high mobility electron gas. The latter is considered short in the present manuscript. However, since the authors clarified specific assumptions in their theoretical model, I believe the paper can be published in its current form. Analyzing the system beyond the approximations made here can be done later.

## Points need to be address:

1. I still find that the justification of approximation in Eq. (34) is sketchy and likely misses some essential effects related to the impact of the radiation on the distribution function in microwave fields.

$$-\frac{\partial f(\varepsilon)}{\partial \varepsilon} \approx \delta(\varepsilon - \varepsilon_F). \quad (34)$$

2. Moreover, the authors are misinterpreting the results of earlier theoretical works. In particular, Ref. [31] demonstrates both the effect of photo excitations of electrons and the dressing of electronic states.

- [31] S. Morina, O. V. Kibis, A. A. Pervishko, and I. A. Shelykh, *Phys. Rev. B* **91**, 155312 (2015).

3. This paper also discusses the importance of the disorder structure and that the large parameter  $r_c$  often characterizes the high mobility electron gas. The latter is considered short in the present manuscript. However, since the authors clarified specific assumptions in their theoretical model, I believe the paper can be published in its current form. Analyzing the system beyond the approximations made here can be done later.