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Dear Editors,

We are submitting our manuscript entitled “Realization of metallic state in 1T-TaS2 with persisted long-range order of charge density wave”for your consideration in *Phys. Rev. Lett.*

1T-TaS2exhibits various quantum phases at low temperatures, such as the commensurate charge density wave (CDW) state, the Mott insulating state, the doping /pressure induced superconducting state, and the possible quantum spin liquid state etc. Even though playing the essential role, the competition between these quantum phases still remains elusive. In particular, it is believed that the metallization of 1T-TaS2 starts at the domain boundary of CDW state with a broken long-range CDW order. Such metallization may also lay the foundation for the superconducting transition.

In this study, we demonstrate a novel metallization of 1T-TaS2 by means of surface alkali doping.Using scanning tunneling microscopy, we reveal that the Mott gap is filled up by the in-gap additional excitation. Comparing to previous studies, the revolutionary novelty of this work includes: 1) the additional excitation is located near the lower Hubbard band but not the upper Hubbard band as that in the conventional Mott insulators, and 2) the long-range CDW order is NOT broken.These remarkable results clearly indicate a completely new mechanism of metallization. In combination with the numerical calculations, we find that the appearance of the in-gap excitations near the lower Hubbard band mainly originate from the effectively reduced on-site Coulomb repulsion by the adsorbed alkali ions, which can be described by a site-dependent Hubbard model.

This study extends our understanding of the correlation of CDW with Mott insulator-metal transition, and possibly further with superconductivity, in transition metal dichalcogenides. We emphasize that it is the first-time observation of the metallic state in 1T-TaS2 with the persisted long-range CDW order.

We believe this work will draw a broad readership of *Phys. Rev. Lett*. We hope you share our excitement in these results and would appreciate your consideration of this manuscript for initiating the peer-review process.

A list of suggested referees is enclosed.

Best regards,

Shun-Li Yu, Jian-Xin Li, and Shao-Chun Li