Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Break the electron- hole balance and pressure induced superconductivity in Tungsten Ditelluride.[1] FENGQI SONG, XING-CHEN PAN, Nanjing Univ — Tungsten ditelluride has garnered immense interest due to the recent discovery of titanic unsaturated magnetoresistance up to 60 Tesla and its possible topological metal nature. The titanic unsaturated magnetoresistance is attributed to the perfect compensation between the opposite carriers in this material. Motivated by the small and sensitive Fermi surface of 5d electronic orbitals, we break the electron-hole balance by the application of high pressure. Superconductivity sharply appears at the pressure of 2.5 GPa, quickly reaching a maximum critical temperature of 7 K at around 16.8 GPa, and followed by a monotonic decrease in Tc with increasing pressure exhibiting the typical dome-shaped superconducting phase. What's more, linear magnetoresistance dominates the transport behavior under high pressure instead of semi-classical parabolic magnetoresistance, like in other topological metals. Refence: Nature Commun. 6, 7805 (2015), arXiv 1505, 07968.

[1]The authors would like to thank the National Key Projects for Basic Research in China, the National Natural Science Foundation of China , the NSF of Jiangsu Province, the PAPD project, and the Fundamental Research Funds for the Central Universities.

Fengqi Song
Nanjing Univ

Date submitted: 01 Dec 2015 Electronic form version 1.4