Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Novel properties of Tungsten ditelluride HUIMEI LIU, Nanjing Univ, NATIONAL LABORATORY OF SOLID STATE MICROSTRUCTURES, SCHOOL OF PHYSICS, COLLABORATIVE INNOVATION CENT COLLABORATION — Tungsten ditelluride has attracted intense research interest due to the recent discovery of its large unsaturated magnetoresistance up to 60 Tesla. By using density functional theory calculations, we qualitatively reproduced the observed spin texture. Since the spin texture would forbid back scatterings that are directly involved in the resistivity, we suggest that the SOC and the related spin and orbital angular momentum textures may play an important role in the anomalously large magnetoresistance of WTe2. Motivated by the presence of a small, sensitive Fermi surface of 5d electronic orbitals, we also boost the electronic properties by applying a high pressure, and introduce superconductivity successfully.

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Date submitted: 06 Nov 2015 Electronic form version 1.4