Event Selection for Dark Matter Search of XENON1T SHIXIAO
LIANG, Rice Univ, XENON COLLABORATION — The XENON1T experiment is
the most sensitive direct detection experiment for WIMP dark matter with masses
above 6 GeV/c^2. We used a dual-phase xenon time-projection chamber containing
2 metric tons of liquid xenon. An exposure of one tonne-year of science data was
collected between October 2016 and February 2018. This talk will present the event
selection method used in data analysis of XENON1T that led to the most stringent
limits on various WIMP models. I will discuss the reconstruction and selection
of the events used by that analysis, and their respective efficiencies. The goal of
these selections were to isolate single-scatter events in the energy range of interest.
These selections depends upon a series of reconstruction and correction steps on the
data. Our analysis starts with understanding photosensor stability and performance,
followed by how we reconstruct scintillation and ionization signals, before ending
with how properties of interactions are determined. I will discuss these steps while
also explaining certain classes of backgrounds that we remove.

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