Abstract Submitted
for the APR21 Meeting of
The American Physical Society

**Re-analysis of 3.5 keV line**[1] YUJIN PARK, BENJAMIN SAFDI, University of California, Berkeley, JOSHUA FOSTER, CHRISTOPHER DESSERT, University of Michigan, Ann Arbor — I describe a reanalysis of data sets that have previously been found to harbor evidence for an unidentified X-ray line at 3.5 keV in order to quantify the robustness of earlier results that found significant evidence for a new X-ray line at this energy. The 3.5 keV line is intriguing in part because of possible connections to dark matter. We analyze observations from the XMM-Newton and Chandra telescopes. We investigate the robustness of the evidence for the 3.5 keV line to variations in the analysis framework and also to numerical error in the chi-square minimization process. For example, we consider narrowing the energy band for the analysis in order to minimize mismodeling effects. The results of our analyses indicate that many of the original 3.5 keV studies (i) did not have fully converged statistical analyses, and (ii) were subject to large systematic uncertainties from background mismodeling. Accounting for these issues we find no statistically significant evidence for a 3.5 keV line in any X-ray data set.

[1]This work was supported in part by the DOE Early Career Grant DESC0019225.

Yujin Park
University of California, Berkeley

Date submitted: 08 Jan 2021 Electronic form version 1.4