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The nature of the soft X-ray emission of tidal disruption events KATIE AUCHETTL, Ohio State Univ - Columbus, JAMES GUILLOCHON, Harvard University, ENRICO RAMIREZ-RUIZ, University of California Santa Cruz — If a star passes within the tidal radius of a supermassive black hole, it will be disrupted, and subsequently accreted, producing a luminous X-ray flare. Over the last few decades, a significant number of tidal disruption events (TDEs) have been discovered, however for only a handful of these events has the X-ray emission from these source been studied in detail. In this talk, I will present the results of a comprehensive, systematic study of the soft X-ray emission from arising from TDEs, while highlighting observationally how the X-ray emission from these events differ from those of AGN. In particular, I will show that the X-ray emission of a TDE evolves significantly with time and decays with power-law indices that are much shallower than the canonical -5/3. In addition, I will show that the long lifetimes of TDEs are consistent with what one would expect from a main sequence star being disrupted by a viscously slowed BH with mass $< 10^7 M_{\odot}$, while the isotropic luminosities of jetted and non-jetted events are separated by a "reprocessing valley", which we suggest is naturally populated by optical/UV TDEs whose X-ray emission is being reprocessed into lower energies.

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