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Juno-UVS Observations of Io during the PJ58 Flyby

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Currently in its first extended mission, NASA's Juno spacecraft has made several close approaches to Jupiter's Galilean satellites. The final of these very close flybys will be of Io during the perijove (PJ) 58 orbit, scheduled to occur at 17:48:35 UTC on 3 Feb. 2024, about 3^h59^m prior to PJ58. Juno's Ultraviolet Spectrograph (UVS) is a photon-counting far-ultraviolet (FUV) imaging spectrograph with a bandpass of 68-210 nm, which will be used to observe Io's numerous FUV emissions during the flyby. The circumstances of the flyby are similar to that for Ganymede during PJ34 at 16:56 UTC on 7 June 2021, with the satellite only observable for a few minutes on either side of Juno's closest approach. We plan to record data +/-5 min (at best 20 swaths of data) about the closest approach time hoping for a significant decrease in the high radiation background due to shielding provided by Io itself. Our observations will range from an altitude of 1500 km (closest approach) to 7820 km, giving the UVS data an expected spatial resolution of 6 to 28 km at the sub-spacecraft point. As with the similar close flyby of Ganymede (Greathouse et al. 2022; Molyneux et al. 2022), UVS will attempt to measure reflected FUV sunlight from the surface of Io and airglow emissions from oxygen and in this case sulfur atoms. These observations will be more challenging than at Ganymede, however, since the background due to penetrating (>10 MeV) electrons at Io is expected to be a factor of 10 or more larger than at Ganymede. In this talk we will present results from the initial reduction and analysis of the UVS data obtained during the flyby of Io.