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UV-LED based charge control for LISA TAIWO OLATUNDE, STEPHEN APPLE, ANDREW CHILTON, SAMANTHA PARRY, PETER WASS, GUIDO MUELLER, JOHN CONKLIN, Univ of Florida - Gainesville — The residual test mass acceleration in LISA must be below 3 fm/s2/$\sqrt{}$Hz at all frequencies between 0.1 and 3 mHz. Test mass charge coupled with stray electrical potentials and external electromagnetic fields is a well-known source of acceleration noise. LISA Pathfinder uses Hg lamps emitting mostly around 254 nm to discharge the test masses via photoemission, but a future LISA mission launched around 2030 will likely replace the lamps with newer UV LEDs which have lower mass, better power efficiency, smaller size and higher bandwidth. This presentation will discuss charge control demonstrated on the torsion pendulum in AC and DC modes at the University of Florida using latest generation UV LEDs producing light at 240 nm with energy above the work function of pure Au. Results of Au quantum efficiency measurements (number of emitted electrons per incident photons) which is critical for bi-polar charge control will also be presented.

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