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Calibrating and characterizing X-ray diagnostics using the Lawrence Livermore National Laboratory's Electron Beam Ion Trap: A Physics teacher's perspective CHAD GILLIS, PETER BEIERSDORFER, GREG BROWN, JOEL CLEMENTSON, ALEX DIXON, RONNY ELOR, EDWARD MAGEE, ELMAR TRABERT — Using Lawrence Livermore National Laboratory's Electron Beam Ion Trap (EBIT) as an X-ray source, we characterized a flat-field grating spectrometer and calibrated the X-ray transmission of optical-blocking filters. The flat-field grating spectrometer is being used to diagnose magnetically confined plasma and the optical-blocking filters are part of a variety of X-ray diagnostics used to study a plethora of sources including inertial confinement fusion plasma, high energy density plasma, and astrophysical plasma. I will give an overview of the calibration process and also discuss how I expect to relate this experience to teaching high school physics students. This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344 and is also supported by California State University.

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