

Abstract Submitted
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Absolute Wavelength Measurements of Transitions in H- and He-like Argon and Sulfur Ions with a Novel Crystal Spectrometer HJALMAR BRUHNS¹, JOHANNES BRAUN, KATHARINA KUBIČEK, JOSÉ R. CRESCO LÓPEZ-URRUTIA, JOACHIM ULLRICH, Max Planck Institute for Nuclear Physics, Heidelberg, Germany, STRUCTURE AND DYNAMICS OF FEW-ELECTRON IONS (EBIT) TEAM — High-precision absolute and relative wavelength measurements of highly charged H-like and He-like ions have been carried out at the Heidelberg Electron Beam Ion Trap (EBIT) with a novel crystal spectrometer applying the Bond method. The Ar¹⁶⁺ results, with error bars of $\delta\lambda/\lambda < 5 \cdot 10^{-6}$, are the most precise absolute wavelength measurements in highly charged ions up to now and confirm recent relativistic and QED calculations for this range of Z . This level of accuracy was reached by introducing a new method for the determination of the Bragg angle using two laser beams as fiducials. These make the commonly-used entrance slits unnecessary, thus reducing the time necessary for reaching high statistical significance, and also eliminating various systematic geometric error sources. A comparison to theory and other experimental results will be presented.

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