

Abstract Submitted
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Variation in the Fine Structure Constant JONATHAN WHITMORE, University of California - San Diego — There have been claimed detections of a change in the value of the fine-structure constant using measurements made with quasar absorption lines using both the Keck-HIRES and VLT-UVES spectrographs. If the fine-structure constant had a different value, the relative spacings will change in differing ways depending on both the species of atom and the particular atomic transition due to higher order relativistic effects. For spectrographs to make measurements of these small shifts requires very accurate wavelength calibration over large wavelength ranges. After developing a method to check the wavelength calibration of the spectrographs, we uncovered calibration problems with the standard way that the spectrographs are used for detecting quasar absorption lines. The systematic errors were found at both Keck and VLT and were of the same order as the effect that a changing fine-structure constant would produce. I will provide a background for the physics of how a different fine-structure constant would change the energy level spacings of atoms, as well as the most recent implications this systematic error would have to the claimed detection of a changing fine-structure constant.

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