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An upper limit on a variation of the fine-structure constant from an analysis of the Mg II line towards quasar J110325-264515

We report a new limit on the space-time variation in the fine-structure constant ($\alpha = e^2/(4\pi\epsilon_0 \hbar c)$) obtained from analysis of the Mg II line from quasar J110325-264515 at $z_{\text{abs}}=1.8389$. We find $\Delta\alpha/\alpha = (-0.155 \pm 0.728) \times 10^{-6}$ by a comparison of quasar spectra of Mg II with spectra used in a laboratory. The result obtained in this work is used to suggest further improvement in observational technique which would lead to a tighter constraint on a variation of the fine-structure constant.

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