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Isotope shift spectroscopy in neutral strontium PETER ELGEE, NEAL PISENTI, HIROKAZU MIYAKE, ANANYA SITARAM, NICK MENNONA, GRETCHEN CAMPBELL, University of Maryland, College Park — Isotope shift spectroscopy provides a sensitive probe into nuclear physics and recent proposals have suggested using the linearity of King plots to put a bound on new physics. The narrow lines and four stable isotopes of strontium are an attractive platform for such an investigation. We present isotope shift measurements, and a King plot analysis on the $^1S_0 \rightarrow ^3P_0$ clock transition and the $^1S_0 \rightarrow ^3P_1$ intercombination line in all four stable isotopes of strontium. This work could help resolve discrepancies between measured and theoretical values for the field shift constants from a similar analysis in Ca^+ . In addition, it paves the way for using the narrow optical transitions of strontium to put limits on new physics.

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