

Abstract Submitted
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Electronic Grüneisen Parameter In Paramagnetic Nickel¹
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netic Field Laboratory, Florida State University — We have conducted the first
measurement of electronic Grüneisen parameter γ_e in the paramagnetic state of fer-
romagnetic transition metal nickel by monitoring the laser-induced ultrafast stress
dynamics using femtosecond electron diffraction. This method overcomes the re-
striction of traditional low-temperature methods and offers a unique path to study
electronic thermal expansion in magnetic metals. Our measurement indicates that
the local magnetic moment that persists in the paramagnetic state of nickel does
not contribute significantly to electronic thermal expansion. This result would serve
as an important test of current models regarding the magnetism in ferromagnetic
transition metals.

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