

Abstract Submitted  
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**Study electron-phonon interactions under high pressures by ultrafast time-resolved spectroscopy** XIAOJING TAN, ALEXANDER GONCHAROV, VIKTOR STRUZHKIN, XIAOJIA CHEN, Geophysical Lab, Carnegie Institution of Washington — We study the electron-phonon interactions in Al under high pressures by ultrafast time-resolved spectroscopy. We observe dramatic change of the pump-probe signals with pressure between 3.0 and 7.5 GPa: a fast decay in order of picosecond, followed by a bump that evolves with pressure. The change can be explained as competitions between electron-phonon coupling, hot electron diffusion and non-Fermi distribution of hot electrons. It's the decrease of electron-phonon coupling with pressure that cause hot electron diffusion play the main role for the fast decay, and the change of the non-Fermi electrons distribution results the evolution of the bump with pressure.

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