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Stratification of physical parameters in a C-class solar flare using multiline observations

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We present high-resolution and multiline spectropolarimetric observations of a C2-class solar flare (SOL2019-05-06T08:47). The rise, peak, and decay phases of the flare were recorded continuously and simultaneously in the Ca II K, Ca II 8542 Å, and Fe I 6173 Å lines with the CRISP and CHROMIS instruments at the Swedish Solar Telescope. At the flare footpoints, a non-LTE multiline inversion code (STiC) was employed to infer the temperature, magnetic field, line-of-sight (LOS) velocity, and microturbulent velocity. All observed lines were analyzed simultaneously in order to understand the stratification of the physical parameters in the flaring and non-flaring atmosphere. In this talk, we will discuss the temporal behavior of the inferred parameters during flare and non-flare times in the photosphere and the chromosphere. Moreover, the LOS magnetic field changes in the photosphere and the chromosphere during the flare. We will also discuss how our less intense C-class flare can heat the deeper layers of the solar chromosphere, mainly at the flare footpoints, without affecting the photosphere.

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