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Using HINODE/EIS to confirm a seismologically inferred coronal temperature

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Abstract. The Extreme-Ultraviolet Imaging Spectrometer on board the HINODE satellite is used to examine the loop system described in Marsh et al. (2009) by applying spectroscopic diagnostic methods. A simple isothermal mapping algorithm is applied to determine where the assumption of isothermal plasma may be valid, and the emission measure locii technique is used to determine the temperature profile along the base of the loop system. It is found that, along the base, the loop has a uniform temperature profile with a mean temperature of 0.89 ± 0.09 MK which is in agreement with the temperature determined seismologically in Marsh et al., using observations interpreted as the slow magnetoacoustic mode. The results further strengthen the slow mode interpretation, propagation at a uniform sound speed, and the analysis method applied in Marsh et al. It is found that it is not possible to discriminate between the slow mode phase speed and the sound speed within the precision of the present observations.