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Full atmosphere inversion of HINODE SOT/SP observations: Theoretical perspective

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Abstract. The SOT/SP onboard Hinode enabled for the first time seeing-free spectropolarimetric observations of the solar photosphere in high temporal, spatial and spectral resolution. Different inversion methods have been employed to measure physical parameters of the observed photosphere. The most popular one is Milne-Eddington type of inversion that has successfully been tested using the results of a realistic 3D MHD simulation (Orozco Suarez et al, 2007). In this work we show the results of similar tests but using a more complex *full atmosphere* inversion method (Socas-Navarro, 2004). Various numerical experiments are designed to test the most important aspects of the problem. The results show that the full atmosphere inversions provide reliable reconstruction of the gradients in the photosphere along the line-of-sight at different heliocentric angles.