Hinode-3: 3rd Hinode Science Meeting
Hitotsubashi Memorial Hall, Tokyo
1–4 December, 2009

Velocities in magnetoconvective structures inside sunspot umbrae

Ada N. Ortiz Carbonell

Institute of Theoretical Astrophysics - University of Oslo

Luis R. Bellot Rubio

Instituto de Astrofisica de Andalucia (CSIC)

Luc Rouppe van der Voort

Institute of Theoretical Astrophysics - University of Oslo

Abstract. CRISP, the bidimensional spectropolarimeter installed at the Swedish 1-meter Solar Telescope in 2008, offers new opportunities for high resolution studies of the solar photoshere and the chromosphere, and is the perfect complement to the spectropolarimeter of the Solar Optical Telescope on board Hinode. In this talk I will present CRISP observations of the pair of Fe I lines at 630 nm taken in June 2008. We have used these data to determine the velocity field in magnetoconvective structures that are present inside pores and sunspots (known as umbral dots) with the highest spatial resolution achieved to date (about 0.13\arcsec). For the first time we detect the downflows predicted by recent numerical simulations of magnetoconvection in sunspots and follow their evolution with time. We also confirm that some umbral dots exhibit central dark lanes.