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## Temporal downflows in a penumbra

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**Abstract.** We are analyzing downflow patches in a penumbra identified by enhanced signals in the wings of Stokes V profile. These downflows have the same polarity as the sunspot umbra, i.e. they are of different origin than the downflows observed in the outer penumbra which have an opposite polarity and are considered to be the sinks of the Evershed flow. The repetitive 2" wide raster scans of penumbral regions that are taken with one minute cadence by the Hinode spectropolarimeter are used to study the properties of these phenomena. The size of the downflow patches is on the resolution limit of the instrument, about 0.3". The lifetimes of these downflows are mostly around three or four minutes, but reaching up to 10 minutes. The comparison between the continuum intensity maps and intensities at blue and red wing of Stokes V profile shows that the downflows are taking place at the edge of bright penumbral grains, i.e. upflow regions. The upflows are weakened or disappear with the occurrence of the downflows. The results of the inversions of the observed Stokes profiles show that the downflows take place in regions with stronger and more vertical magnetic field than the upflows. The comparison with Ca II H running difference images does not show any clear relation to the chromospheric brightenings (penumbral microjets).