Temporal behaviour of the circular polarization of solar bursts at 7 GHz

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We present the results of the circular polarization degree variations in association to the fluxes of bursts observed at 7 GHz. The observations were performed by a 1.5 m antenna patrol polarimeter, recently renewed, achieving good sensitivity ($<$ 0.5 sfu) and 20 ms time resolution. The 7 analysed events are essentially small and impulsive (peak flux below 30 sfu). The analysis of the variation of the polarization degree in association to the flux showed that the polarization could be separated in two components. One slow component with a degree of 5 - 30 %, already defined just in the beginning of the event, presenting a stationary behaviour or an increasing one during the event evolution. The events presenting no structure in their time profiles were classified as simple, and the events presenting fast structures are classified as complex. The analysis of the time variations of the polarization degree and flux of simple events suggests that in some cases there are correlated structures, but the results are not conclusive. It is necessary to study a larger number of events. The complex events present fast time variations in polarization degree and flux, suggesting a correlation in phase or in anti-phase with the flux. The amplitude of the fast variations in polarization for the weak events (flux below 30 sfu) was about 15%, while for a strong one ($>$ 1000 sfu) was only 2%. The V Stokes parameters for these complex events, are almost the same (6 sfu), independently of the intensity (I). If this behaviour could be confirmed for a large collection of events, this might mean that the emergent radiation from the bursts have a well defined V polarized component, while the degree of polarization becomes negligible in strong bursts, since the I parameter is too large compared to V. This finding confirms earlier results showing that the small bursts tend to have higher polarization degrees.