new insight into the circular polarisation of radio pulsars.} \(|V|\): New insight into the circular polarisation of radio pulsars.

[Karastergiou et al.] A. Karastergiou\(^1\), S. Johnston\(^1\), D. Mitra\(^2\), A. G. J. van Leeuwen\(^3\), and R. T. Edwards\(^4\)

Released 2003 Xxxxx XX

abstract We present a study of single pulses from nine bright northern pulsars to investigate the behaviour of circular polarisation, \(V\). The observations were conducted with the Effelsberg 100-m radio telescope at 1.41 GHz and 4.85 GHz and the Westerbork radio telescope at 352 MHz. For the first time, we present the average profile of the absolute circular polarisation \(|V|\) in the single pulses. We demonstrate that the average profile of \(|V|\) is the distinguishing feature between pulse components that exhibit low \(V\) in the single pulses and components that exhibit high \(V\) of either handedness, despite both cases resulting in a low mean. We also show that the \(|V|\) average profile remains virtually constant with frequency, which is not generally the case for \(V\), leading us to the conclusion that \(|V|\) is a key quantity in the pulsar emission problem.