ABSTRACT

In this work, we have modelled the supernova remnant (SNR) G296.5+10, by means of 3D magnetohydrodynamics (MHD) simulations. This remnant belongs to the bilateral SNR group and has an additional striking feature: the rotation measure (RM) in its eastern and western parts are very different. In order to explain both the morphology observed in radio-continuum and the RM, we consider that the remnant expands into a medium shaped by the superposition of the magnetic field of the progenitor star with a constant Galactic magnetic field. We have also carried out a polarization study from our MHD results, obtaining synthetic maps of the linearly polarized intensity and the Stokes parameters. This study reveals that both the radio morphology and the reported RM for G296.5+10 can be explained if the quasi-parallel acceleration mechanism is taking place in the shock front of this remnant.