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# Erratum: "Detection of Coherent Emission from the Bp Star HD 142990 at uGMRT Frequencies" (2019, ApJ, 877, 123)

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In the published article, we reported the discovery of electron cyclotron maser emission (ECME) from the magnetic Bp star HD 142990 in band 4 (550–804 MHz) of the upgraded Giant Metrewave Radio Telescope (uGMRT) and also at 1420 MHz (*L* band of the legacy GMRT). One of the characteristics of ECME is that it produces highly circularly polarized emission. We recently carried out a test in band 4 of the uGMRT and found that the convention for defining right and left circular polarizations is opposite to that of the IEEE (Das et al. 2020). As a result, an incorrect magnetoionic mode of emission for ECME was inferred from the sequence of arrival of the right and left circularly polarized pulses around the rotational phases corresponding to the zeros of the longitudinal magnetic field $\langle B_z \rangle$ (see Figure 1).

Thus, under the IEEE convention, the observed right and left circular polarizations (RCP and LCP) for HD 142990 discussed in the published article (Das et al. 2019) should be interchanged, i.e., they are actually LCP and RCP, respectively. The correct magnetoionic mode suggested by the pulses near null 1, where $\langle B_z \rangle$ changes from negative to positive (Figure 1) is the extraordinary (X-) mode. This implies that the ratio between plasma frequency and electron gyrofrequency $\omega_p/\omega_B < 0.3$ (Melrose et al. 1984; Sharma & Vlahos 1984). The corresponding plasma density at the site of emission at 643 MHz is $n_p < 5 \times 10^8\,\mathrm{cm}^{-3}$ for the fundamental harmonic and $n_p < 10^8\,\mathrm{cm}^{-3}$ for the second harmonic.

The fact that the magnetoionic mode at 643 MHz (inferred from the sequence of arrival of RCP and LCP pulses near null 1) is extraordinary makes the hypothesis of mode transition over the frequency range of 687–804 MHz highly unlikely since we do not expect a transition from ordinary to extraordinary with a decrease in frequency. In that case, our estimation of plasma density

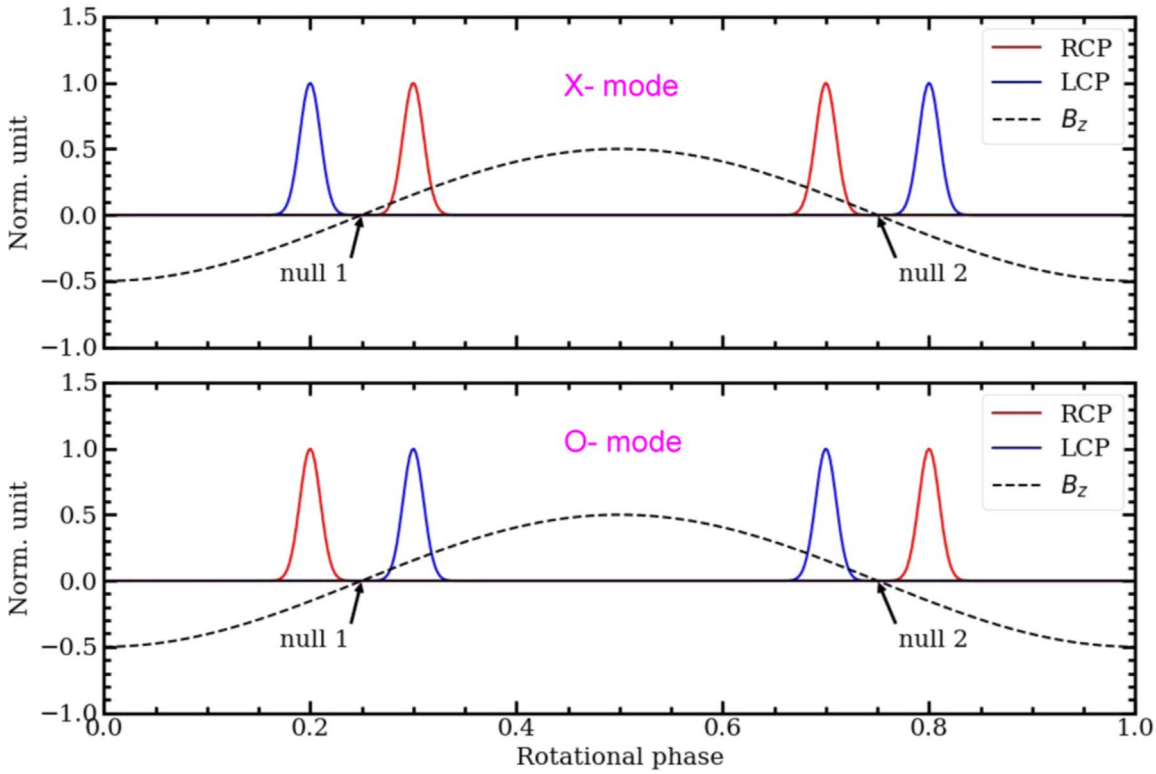


**Figure 1.** Cartoon diagram showing ECME lightcurves for the two magnetoionic modes. Note that RCP and LCP are in accordance with the IEEE convention. This figure has been taken from Das et al. (2019).

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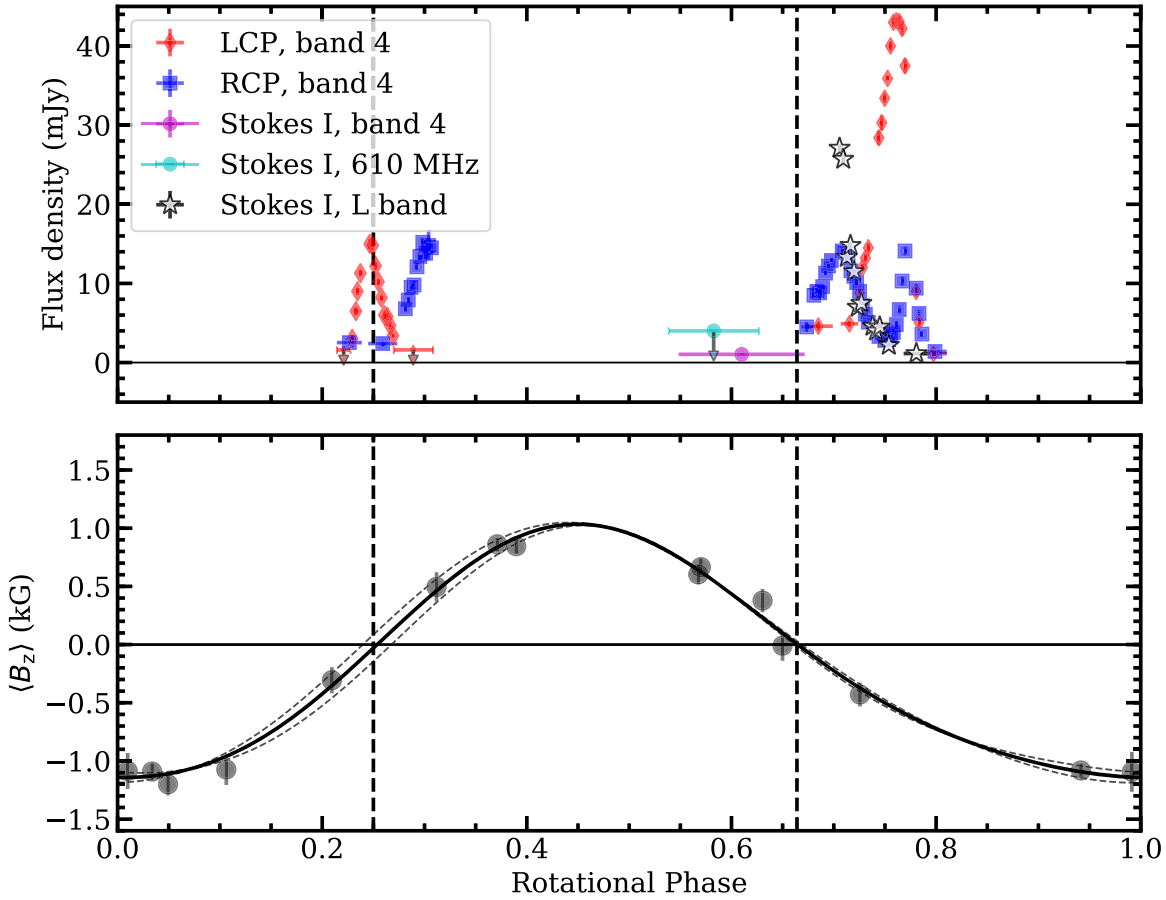


**Figure 2.** Upper panel: the ECME pulses observed from HD 142990 with the uGMRT; RCP and LCP correspond to the right and left circular polarization respectively, and are in accordance with the IEEE convention. The data were phased with the ephemeris of Shultz et al. (2019). Lower panel: the $\langle B_z \rangle$ curve for the star (Shultz et al. 2018). The solid and dashed curves represent the best second-order harmonic fit and the $1\sigma$ uncertainty respectively. The dashed vertical lines correspond to the magnetic null phases. This figure is different from Figure 4 of Das et al. (2019) in terms of the sense of circular polarization of the pulses.

($n_e \approx 6 \times 10^8\,\mathrm{cm}^{-3}$ for emission at the fundamental harmonic and $n_e \approx 2 \times 10^8\,\mathrm{cm}^{-3}$ for emission at the second harmonic) assuming a mode transition over 687–804 MHz, is no longer valid. Therefore all the discussion related to this hypothesis (Section 6.1 and Figure 7 of the published article) should be ignored.

In Figure 2, we show the ECME lightcurves (upper panel) along with the $\langle B_z \rangle$ curve for the star (lower panel) as reported by Shultz et al. (2018). The RCP and LCP in the upper panel are interchanged w.r.t. the corresponding figure (Figure 4) of the published article to make them consistent with the IEEE convention. A similar interchange should be made for LCP and RCP in Figures 3, 5, 6, and 8, and for Tables 2 and 3 of the published article.

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