

Response to the Reviewer 1:

Dear Referee,

We are very thankful to you for your valuable suggestions. By keeping your comments in mind, we improve our manuscript.

Minor changes:

- 1. In Abstract the authors write “in a weakly ionospheric plasma”. I guess it should be “in a weakly conducting ionospheric plasma”.**

Reply: In p.1, lines 18-22, we improve the line “in a weakly ionospheric plasma” with “in a weakly conducting ionospheric plasma”.

- 2. In Sect. 2, define n and μ_0 .**

Reply: in p.2, line 99, the symbols n and μ_0 have been defined.

- 3. The sentence after Eq. (5) does not make very much sense.**

Reply: The confusing sentence “It is also noted that parameter ε involves magnitude of nonlinear products” has been removed.

- 4. The right term is not “apostrophe” but “prime”.**

Reply: The word “apostrophe” has been replaced with “prime”.

Major revision:

- 5. In p.1., lines 18-22, the abstract has been improved.*
- 6. In p.1., line 27, the word “indicates” has been replaced with “indicate”.*
- 7. In p.1., line 29, the word “the” has been added after “various atmospheric ...”.*
- 8. In p.1., lines 27-36, The following sentences “In E and F regions of ionosphere ...” have been rephrased with “The presence of sheared...”.*
- 9. In p.1., lines 38-44, the following sentences “In the past decade, several nonlinear phenomena were ...” have been rephrased with “In recent decades, several nonlinear phenomena related ...”.*
- 10. In p.1, lines 46-50, the following lines “the effects of the zonal (sheared) flows on Rossby nonlinear structures” have been rephrased with “The authors considered the effects of the zonal flows on nonlinear structures in Rossby waves and ...”.*
- 11. In p.2., lines 51-54, the following sentence “Recently, it is implied that such coupled Rossby-Khantadze ...” has been rephrased with “More recently, it was seen, that propagation of coupled Rossby-Khantadze (RK) waves...”.*
- 12. In p.2., lines 51-54, the following sentence “Recently, it is implied that such coupled Rossby-Khantadze ...” has been rephrased with “More recently, it was seen, that propagation of coupled Rossby-Khantadze (RK) waves...”.*
- 13. In p.2., line 58, the word “were” is replaced by “was” and the word “as well” added after the word “investigated”.*
- 14. In p.2., lines 54-56, the following sentence “In the present work, the spatially inhomogeneous ...” has been rephrased with “The spatially inhomogeneous Coriolis parameter and ambient magnetic field along the meridians ...”.*
- 15. In p.2., lines 58-60, the following sentence “In this work the splitting of the vortices which ...” has been rephrased with “In his work he has pointed out the splitting of ...”.*
- 16. In p.2., lines 65-67, the following sentence “Kaladze et al. (2009) studied the solitary properties ...” has been rephrased with “Earlier, Kaladze et al. (2009) had earlier investigated the properties of ...”.*

17. In p. 2., lines 67-68, the following words “studied (Jian et al., 2009).” have been replaced with “done by Jian et al., (2009).”
18. In p. 2., lines 69-71, the following lines “The present problem is not reported before and the novelty ...” have been replaced with “In the present paper, we have considered the effect of magnetic field”
19. In p.2., lines 72, the words “partially ionized ionospheric E-region plasma.” has been changed with “partially ionized conducting plasma, found in the ionospheric E-region”.
20. In p.2., lines 74-77, the following sentence “In Sec. 2, by using multiple scale ...” has been rephrased with “In Sec. 2, by using the multiple scale analysis and perturbation approach from a system of ...”.
21. In p.2., lines 82-87, the following paragraphs “We have considered weakly conductive E-ionospheric ...” is replaced with “We consider weakly ionized E-ionospheric region ...”
22. In p.2., lines 88-93, the following paragraphs “The nonlinear behavior of considered sheared Rossby-Khantadze waves is pointed out ...” is replaced with “The nonlinear behavior of the sheared Rossby-Khantadze waves ...”.
23. In p.3., lines 97-100, the following sentence “where h represents the z-component ...” is rephrased with “In Eq. (1), h represents the z-component ...”.
24. In p.3., line 116, the word “considered as” has been added after “is”.
25. In p.3., line 117-118, the word “... forms a weak nonlinear problem, ...” is replaced with “Which forms a weakly nonlinear system, ...”.
26. In p. 4, lines 166-168, the following lines “... ,we have used a couple of approximations the first ...” has been replaced with “... , we see that the problem is time independent, but cannot be analytically solved ...”
27. In p. 5, line 220, the word “responsible” is corrected with “responsible”.