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Peer Review

Review of: "Improving Our Knowledge of the Solar Near-Surface Shear Layer: The Special Case of the Leptocline"

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Helioseismology is a very important part of solar physics. It is well known that solar activity is determined by the magnetic field, which is generated in the solar interior. Moreover, human dependence on the Sun becomes more significant due to scientific progress. In particular, the Sun determines space weather, which means the uninterrupted operation of Earth's satellites, without which it is impossible to imagine modern civilization. In spite of this, many issues still remain unresolved.

It has now become clear that the formation of active regions that determine the development of solar flares and coronal mass ejections occurs near the surface of the Sun. As a result, the study of this region (the near-surface shear layer) of the Sun is of increasing interest. In light of the above, the relevance of the presented work is beyond doubt.

In the presented article, the authors draw attention to the importance of studying the leptocline. The article describes in detail the latest achievements in helioseismology. For the first time, convincing evidence is provided on the relationship between changes in the rotational velocity gradient in the leptocline and the solar cycle. The detected changes in the radius of the Sun relative to the leptocline, as well as the results of numerical simulation using radiation hydrodynamics, are of great interest.

The authors of the article are well-known high-level scientists. I believe that the article is written at a high scientific level and will be useful for both amateurs and professionals. I have no fundamental comments.

Minor comments:

The figure caption (Fig. 2) does not include a) and b) and the appropriate description in the text.

For better illustration, it would be good to add a figure with torsion oscillations.

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Declarations

Potential competing interests: No potential competing interests to declare.