

Review of: "Dynamic structure factors and equation of state of fluid iron under Earth's core condition"

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Potential competing interests: No potential competing interests to declare.

The manuscript "Dynamic Structure Factors and Equation of State of Fluid Iron Under Earth's Core Conditions" is well written. The ion-ion dynamic structure factor and equations of state (EOS) of pure iron in Earth's outer core were calculated. Sound velocities were also calculated from analytical and experimental aspects, which are in agreement with each other. I have the following observations, which may be helpful to improve the quality of the paper:

1. The novelty of the work is not clear; it should be highlighted.
2. In Figure (1), the reason for the shift up of $S(q)$ is not clear.
3. The fonts are not consistent in many places. Please check them thoroughly.
4. The reason why the sound velocity was overestimated by the dynamic structure method in comparison to the EOS method is not very clear.
5. More information with adequate references should be added for the Earth Model (PREM).