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

Sang Qiaozhi

Potential competing interests: No potential competing interests to declare.

The ion-ion dynamic structure factor and equations of state (EOS) of pure iron in Earth’s outer core were calculated in the submitted manuscript. Sound velocities calculated from analytical and experimental aspects were found to match well with each other. The method can be of theoretical significance in comprehending the core composition of the Earth, whilst I recommend major revision before it can be considered for publication.

1. The originality of the paper is not clear, and the existing VASP algorithm was used.

2. More information on the reference Earth model (PREM) is desired.

3. I can barely see the rationality behind the fitting method on the basis of PVT and EVT data.

4. In Figure 1, please specify the reasons for the shift-up of S(q) and g(r) of liquid Fe versus the calculation values.

5. An extensive illustration of results is needed. For example, why the sound velocity was overestimated by the dynamic structure factor method in comparison to the EOS method?