Unsigned report on the manuscript 'A Direct Imaging Method for the Half-space Inverse Elastic Scattering Problems' by Zhiming Chen and Shiqi Zhou.

This work is concerned with the reconstruction of an obstacle embedded in a half plan using elastic wave interrogations. The authors use correlated back-propagated wave fields with the incident fields. With such data they define an imaging functional stated on the interval, on the lower border of the half plan, (-d, d). Their goal is to analyze this functional to discuss the resolution of the corresponding imaging modality. This analysis is done in terms of the length of data line, i.e. 2**d**, the 'size of the imaging domain containing the target' **h,** the diameter of the target $\mathbf{d_D}$ and the used shear speed (or the incident frequency) $\mathbf{k_s}$.

I read the paper with attention and pleasure. It is well written with great details. Without doubt, I think the paper deserves publication in an inverse problems journal.

The only objection I have concerns the conclusions made out of the main result, i.e. Theorem 4.3. Indeed, in page 24, just before section 5, they discuss the Kirchhoff high-frequency regime (here one needs the obstacle to be star shaped, isn't it?). Based on the main expansion in Theorem 4.3, they conclude that, away from the illuminated part of the obstacle, its dominating part is decaying in terms of the parameters given above. This is true and reasonable. However:

1. They do not say what happens in the illuminated part. How they intend to use their formula so that one can indeed reconstruct this part. It is just a claim that on the illuminated part the values of the functional are non zero, maybe large, etc. Or, can they get the curvature? More?
2. This resolution analysis is based only on the dominating part. How about the error? Is this error small in that regime. It is not so clear. Under the already used condition, $\mathbf{h/d \ll 1,}$ the worst part of the error term is of the form

   $$\mathbf{(k_s\, d_D)^3\ \ [(h/d)^2\ + (k_s\, h)^{-1/4}].}$$

   We see that one needs $(\mathbf{k_s})^{11/4}\ \mathbf{(d_D)^3 h^{-1/4} \ll 1.}$ However, as $\mathbf{k_s} \gg 1$ due to Kirchhoff high-frequency approximation, this means that one needs $\mathbf{(d_D)^3\ h^{-1/4} \ll 1.}$ Hence the parameters $\mathbf{d_D}$ should be very small (or **h** should be large). Recalling the meaning of the parameter $\mathbf{d_D}$, this would impose the obstacle to be very small! Of course in such condition the RTM method works fine but this condition is not what the authors want to impose. In addition, for such small obstacles, Kirchhoff high-frequency regime makes little sense. The other option is that **h** should be large. This would mean that the object might be very far from the surface where we measure the data. In this case, it would be assimilated to a small object too.

I kindly ask the authors to reply and discuss these issues.