



ISSN 0371-5736

GEOLOGICAL REVIEW

第 卷 第 期

Vol. No.



中国地质学会
《地质论评》编辑委员会
科学出版社

主办
编辑
出版



地 质 论 评

2021 年 第 67 卷 第 3 期

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(本期执行总编辑 章雨旭、刘志强 版式设计及排版 章雨旭、刘志强、黄道豪)

possible reflection point is part of the ellipse, but the reflection point cannot be uniquely determined. if the shot point and another receiver point are chosen, the possible reflection point is part of another ellipse. If the reflector is assumed to be a plane, it can be a horizontal plane or an inclined plane with a fixed inclination. The plane is shown a straight line in the plane of the seismic wave ray, and the straight line must be the common tangent of the two ellipses. Combining the two elliptic equations with the tangent equation can determine the positions of tangent points, the positions of the tangent points are the positions of reflection points. This is the method to determine the positions of reflection point by double ellipse.

Results: We establish a theoretical model and explore the model with the double elliptic method, and the exploration results agree well with the theoretical model.

Conclusions: The double elliptic method was tested by a theoretical model, which proved the validity that double elliptic method determines the positions of the reflection point. An important by-product of the double elliptic method is while the positions of the reflector are calculated, the apparent inclination angle of the reflector is determined.

Keywords: reflection point; normal moveout correction; seismic exploration; double elliptic method

Acknowledgements: This study was supported by the National Natural Science Foundation of China: Spatio-temporal evolution of stress field before and after the Wenchuan County earthquake (No. 41674055)

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Manuscript received on: 2020-09-25; **Accepted on:** 2021-03-17; **Network published on:** 2021-03-20

Doi: 10. 16509/j. georeview. 2021. 03. 171

Edited by: LIU Zhiqiang

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Executive editors of this issue: ZHANG Yuxu, LIU Zhiqiang;
format design and type setting: ZHANG Yuxu, LIU Zhiqiang, HUANG Daomao

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