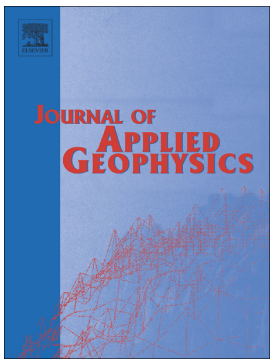


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# 3D superwide-angle one-way propagator and its application in seismic modeling and imaging

**Xiaofeng Jia*, Yunong Jiang* and Ru-Shan Wu†**

* *Laboratory of Seismology and Physics of Earths Interior,*

*School of Earth and Space Science,*

*University of Science and Technology of China,*

*Hefei, Anhui, China, 230026.*

† *University of California, Santa Cruz,*

*CA 95060, United States of America.*

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Running head: **superwide-angle propagator**

## ABSTRACT

Traditional one-way wave-equation based propagators have been widely used in past decades. Comparing to two-way propagators, one-way methods have higher efficiency and lower memory demands. These two features are especially important in solving large-scale 3D problems. However, regular one-way propagators cannot simulate waves that propagate in large angles within 90° because of their inherent wide angle limitation. Traditional one-way can only propagate along the determined direction (e.g., z-direction), so simulation of turning waves is beyond the ability of one-way methods. We develop 3D superwide-angle one-way propagator to overcome angle limitation and to simulate turning waves with superwide-angle propagation angle ($> 90°$) for modeling and imaging complex geological structures.