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This paper was prepared for presentation during the 17th International Congress of the Brazilian Geophysical Society held in Rio de Janeiro, Brazil, 8-11 November 2021.

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Title: An Application of Quantum Annealing Computing to Seismic Inversion

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Abstract

Quantum computing, along with quantum metrology and quantum communication, are disruptive technologies that promise, in the near future, to impact different sectors of academic research and industry. Among the computational problems with great interest in science and industry are the inversion problems. These kinds of problems can be described as the process of determining the cause of an event from measurements of its effects. In this paper, we apply a recursive quantum algorithm to a D-Wave quantum annealer to recover a sound wave speed profile, typical in seismic inversion experiments. We compare the obtained results from the quantum computer to those derived from a classical computer. The accuracy achieved by the quantum computer is nearly the same as that of the classical computer.