

# Accepted Manuscript

Blocky inversion of multichannel elastic impedance for elastic parameters

Davoud Karami Mozayan, Ali Gholami, Hamid Reza Siahkoohi

PII: S0926-9851(17)30108-8  
DOI: doi:[10.1016/j.jappgeo.2018.01.014](https://doi.org/10.1016/j.jappgeo.2018.01.014)  
Reference: APPGEO 3413

To appear in: *Journal of Applied Geophysics*

Received date: 28 January 2017  
Revised date: 28 October 2017  
Accepted date: 17 January 2018



Please cite this article as: Mozayan, Davoud Karami, Gholami, Ali, Siahkoohi, Hamid Reza, Blocky inversion of multichannel elastic impedance for elastic parameters, *Journal of Applied Geophysics* (2018), doi:[10.1016/j.jappgeo.2018.01.014](https://doi.org/10.1016/j.jappgeo.2018.01.014)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Blocky inversion of multichannel elastic impedance for elastic parameters

Davoud Karami Mozayan<sup>a,\*</sup>, Ali Gholami<sup>a</sup>, Hamid Reza Siahkoohi<sup>a</sup>

<sup>a</sup>*Institute of Geophysics, University of Tehran, Tehran, Iran*

---

## Abstract

Petrophysical description of reservoirs requires proper knowledge of elastic parameters like P- and S-wave velocities ( $V_p$  and  $V_s$ ) and density ( $\rho$ ), which can be retrieved from pre-stack seismic data using the concept of elastic impedance (EI). We propose an inversion algorithm which recovers elastic parameters from pre-stack seismic data in two sequential steps. In the first step, using the multichannel blind seismic inversion method (exploited recently for recovering acoustic impedance from post-stack seismic data), high-resolution blocky EI models are obtained directly from partial angle-stacks. Using an efficient total-variation (TV) regularization, each angle-stack is inverted independently in a multichannel form without prior knowledge of the corresponding wavelet. The second step involves inversion of the resulting EI models for elastic parameters. Mathematically, under some assumptions, the EI's are linearly described by the elastic parameters in the logarithm domain. Thus a linear weighted least squares inversion is employed to perform this step. Accuracy of the concept of elastic impedance in predicting reflection

---

\*Corresponding author

*Email addresses:* `dkmozayan@ut.ac.ir` (Davoud Karami Mozayan),  
`agholami@ut.ac.ir` (Ali Gholami), `hamid@ut.ac.ir` (Hamid Reza Siahkoohi)

Download English Version:

<https://daneshyari.com/en/article/8915446>

Download Persian Version:

<https://daneshyari.com/article/8915446>

[Daneshyari.com](https://daneshyari.com)