

1125-65-1985

Vladimir Druskin* (druskin1@slb.com), **Alexander Mamonov**, **Andrew Thaler** and **Mikhail Zaslavsky**. *Solution of inverse hyperbolic problems via data-driven discrete-time reduced order models.*

We compute reduced order model (ROM) from discrete time-domain data for hyperbolic wave equations and obtain ROM's block-tridiagonal realization via data-driven QR transform. Equivalent reformulation of this realization as a Galerkin projection of the underlying PDE allows us direct imaging of a PDE coefficient, suppressing nonlinear artifacts such as multiple reflections. Justification of our approach is based on an intriguing connection of the ROMs with the Krein-Marchenko-Gelfand-Levitan method. We show applications to seismic exploration and medical ultrasound imaging. (Received September 19, 2016)