1125-65-2006 **Vladimir Druskin*** (druskin1@slb.com), **Alexander Mamonov** and **Mikhail Zaslavsky**.
Multi-scale reduced order models with S-fraction sparsification for large wave propagation problems.

We solve large wave propagation problems by splitting computational domains into coarse cells and computing reduced order models (ROMs) of the cell Dirichlet-to-Neumann maps via rational Krylov subspace projection. The novelty of our formulation is the matrix Stieltjes continued fraction (S-fraction) representation of the obtained ROM allowing its block-tridiagonal realization and thus computationally efficient special discretization of the total problem as a sparse network (of graph-Laplacian type) with matrix-valued coefficients, in particular suitable for modern high performance computing platforms. We show numerical result for a 3D multi-phase anisotropic elastic problem. (Received September 19, 2016)