COMPLEX−VALUED FIR SEISMIC MIGRATION FILTER DESIGN USING PURE AND RELAXED PROJECTION ALGORITHMS (MonPmOR5)

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Abstract :

The iterative Pure and Relaxed Projectors are special cases of Vector Space Projection Methods (VSPM). Complex−valued FIR digital filter design using Pure and Relaxed Projectors is proposed for designing seismic migration digital filters. Designing FIR digital filters using VSPM, in general, is able to produce feasible solutions satisfying all the desired filter constraints by the use of only two Fast Fourier Transform (FFT) computations. Furthermore, the design algorithm can be directly extended from one−dimensional (1−D) to multi−dimensional (m−D) filters, an advantage not present in many other filter design techniques. In addition, by using the relaxed projectors, one can achieve faster convergence when compared to the pure projectors. The simulation results show that the relaxed projectors for designing such filters will save up to 86.47% of the number of iterations when compared with the pure projectors.

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