Improving Local and Regional Earthquake Locations Using a Advance Inversion Technique Namely Particle Swarm ptimization

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The estimation of the hypocentral parameters in seismology has remained as one of the best-studied and challenging problems. A simple procedure has presented to obtain the improved locations of local and regional earthquakes with advance inversion technique with minimum seismograph recording geometry. The problem can be formulated as a nonlinear optimization problem in which the decision variables are the hypocentral parameters and the objective function to be minimized is the sum of squares of the differences between the observed and calculated times at specified locations. The objective of this paper is demonstrating the use of the latest heuristic technique for optimization namely **"Particle Swarm Optimization"** for solving the above stated inversion problem. The earthquakes analyzed by this technique have triggered and recorded in the NW Himalayan region, India. The results obtained are discussed in this paper.