ABSTRACT

With the earthquake stations identifier digital record, one can determining and displaying double-couple earthquake event (focal mechanisms) with a software. This research uses the main program Focmec (coded in Fortran77). File input are polarities (P, SV, SH) and amplitude ratios (SV/P, SH/P, SV/SH). With another support program, can display focal sphere and reports acceptable solutions based on selection criteria for the number of polarity errors and amplitude ratio errors.

The search of the focal sphere is uniform in angle, with selectable step size and bounds. The selection criteria for both polarities and angles allow adjustment through weightings for near-nodal solutions. Relative weighting can be useful when any small changes in location and velocity models could produce small change in the takeoff angels. Error threshold from Focmec run produced at most 0,5 (relative weighting) SV polarity errors, P or SH polarity errors is zero, and no ratio errors (with acceptable error of 0,50 for the log10 ratio).

Applications this research include determinations of best-constrained fault-plane solutions for suites of earthquakes recorded at local to regional distances, analysis of large earthquakes observed at teleseismic distances, and the use of recorded polarities and relative amplitudes to produce waveform synthetics. Use this program can provide useful insights about
focal mechanism for large events using only a small number of stations.

Key word: focal mechanism, double couple, focal sphere, polarity errors, amplitude ratio errors, relative weighting, velocity models, takeoff angles.