The earthquake source is represented by the point force ***f***, which may be written in terms of a moment tensor ***M*** as (omitting the source time function)

, (1)

The point force ***f*** in 2D:

, (2)

Multiplying equations (2) by the time-independent test functions, we can obtain:

, (3)

where  and  are the test functions, respectively.

Applying the identity of the Dirac delta function

, (4)

If we can find the dimensionless parameters  satisfying

, (5)

or,

, (6)

Applying the chain rule, (4) can be written

,

(7)

where,

, (8)

Substituting (6) and (8) into (7), and using the unit test function, we obtain



(10)

Therefore, the source force at each GLL node can be written

. (11)