**Appendix**

The acoustic wave equation can be discretized with M-SFD(*N*=2), and here we only list one of the three FD discrete acoustic equations

 

Where  are the FD coefficients. And the analytical expression of them is given by

 

Here we list one of the three FD discrete acoustic equations given by M-SFD(*N*=3)

 

Where  are the FD coefficients. And the analytical expression of them is given by

 

Here we list one of the three FD discrete acoustic equations given by M-SFD(N=4)

 

Where  are the FD coefficients. And the analytical expression of them is given by

 

The above analytical expression of the FD coefficients can also be used in the FD discrete elastic wave equations given by M-SFD(*N*=2,3,4), and just need to substitute  with  or .