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Broadband directive sources modeling for acoustic discrete-time domain methods

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The use of sources with complex directivities in discrete-time domain methods, such as the Finite-Difference Time-Domain method or the Digital Waveguide Mesh, is a recently open topic. However, so far, the provided solutions work for discrete frequencies or frequency-independent sources. Both solutions are useful for very particular cases and in most cases, far from real sources. This paper provides an extension in the use of a monopole source combination for broadband directive sources in discrete-time domain simulations. This method results very effective for frequency-independent and dependent sources, even in cases where the directivity diagrams have considerable lobules. Finally, this method will be tested through several examples.