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# Accelerating 3D Laplace-domain waveform inversion using GPUs

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We developed a 3D Laplace-domain full waveform inversion algorithm using GPUs. The algorithm generates the Laplace-domain wavefields from the time-domain wavefields using a running integration method. By conducting the modeling in the time domain, we could reduce the computational demands required to solve matrix equations of 3D Laplace-domain modeling. By adopting the running integration, the intermediate time-domain wavefields do not need to be copied to the host from the device. Only the final Laplace-domain wavefields needs to be copied and this accelerates the Laplace-domain modeling step. A numerical example using the SEG/EAGE 3D salt velocity model demonstrates the efficiency of the proposed algorithm.