This sequence is an sLASER sequence with a minimum TE = 30 ms for GE scanners running RX27.0_R03. The details of the sequence are identical to those previously implemented on a Siemens platform[1], aside from the timings being slightly different. In order to install this sequence port a stock presscsi sequence into the scanner and load in the name of the sequence (sl). You might have to include the absolute path if you do not have any symbolic links, so for example if your sequence is in /usr/g/research/columbia/cj/ (recommended), you would have to input /usr/g/research/columbia/cj/sl. All the waveform files (i.e., .rho, .pha and .gx) must be in /usr/g/research/columbia/cj/. Create this folder and copy all waveform files into this directory. Then the functionalities of this sequence are identical to a typical GE PRESS sequence. Some tips that are highly recommended but not strictly necessary: 1) turn OVS off, 2) change the CV sup_vapor = 1, and then set opuser17 = 90. VAPOR is better at water suppression than the default CHESS. 3) Set NEX = 16, this uses the optimized 16 step cogwheel phase cycling scheme[2]. When you set NEX = 16 GE will automatically add up the 16 individual traces from the phase cycling scheme, however it does not do this properly because I have modified the phase cycling scheme, so ensure you change the CV no_add = 1 in order for GE to not automatically sum up all individual spectral transients. Lastly, I would set ref_count = 1 in order to automatically obtain water references. Contact cwj211@columbia.edu for any issues or with help porting this to another software version.

References

[1] K. Landheer, M. Gajdosik, and C. Juchem, “Semi-LASER Single-Voxel Spectroscopic Sequence with Minimal Echo Time of 20 ms in the Human Brain at 3 T,” *NMR Biomed*, p. e4324, 2020.

[2] K. Landheer and C. Juchem, “Simultaneous optimization of crusher and phase cycling schemes for magnetic resonance spectroscopy: an extension of dephasing optimization through coherence order pathway selection,” *Magn Reson Med*, vol. 83, no. 2, pp. 391–402, 2020.